CIMON PLC Function Block System Library User Manual

Version: 20150609

1. SYSTEM LIBRARY

1.1. Library Type

Function Block Library has three types : User Library, User System Library and System Library.

Item		User Library	User System Library	System Library
Authority		User	User	CIMON
Folder		Project	CICON	
FB Edit	**Variable**	OK	Not Editable (Read Only)	
	Scan	OK	Not Editable (Note Readable)	
Reused		Save it to file	Always	
FB		Max. 128	Max. 1024	

* If FB in User Library is not used in scan program, the FB will be removed when program is downloaded to PLC. If you want to use the FB you created, save it in file or in User System Library.

* New System Library can be updated without new CICON version installation. Please download new System Library from CIMON website (www.cimon.com).

1) User Library : FB that you create is saved in this folder. You can edit, import and export FB. User Library is belong to project property so if you create new project or open other project, FB that you created will be removed. If you want to use FB that you created at the other project, you can export FB to file or add it to User System Library. If FB in User Library is not used in Scan program, it will be removed when you download project file to PLC. Therefore, export FB to file before downloading project file to PLC. You can also find out deleted FB after uploading PLC to CICON. Click File and choose Import FB backup file.

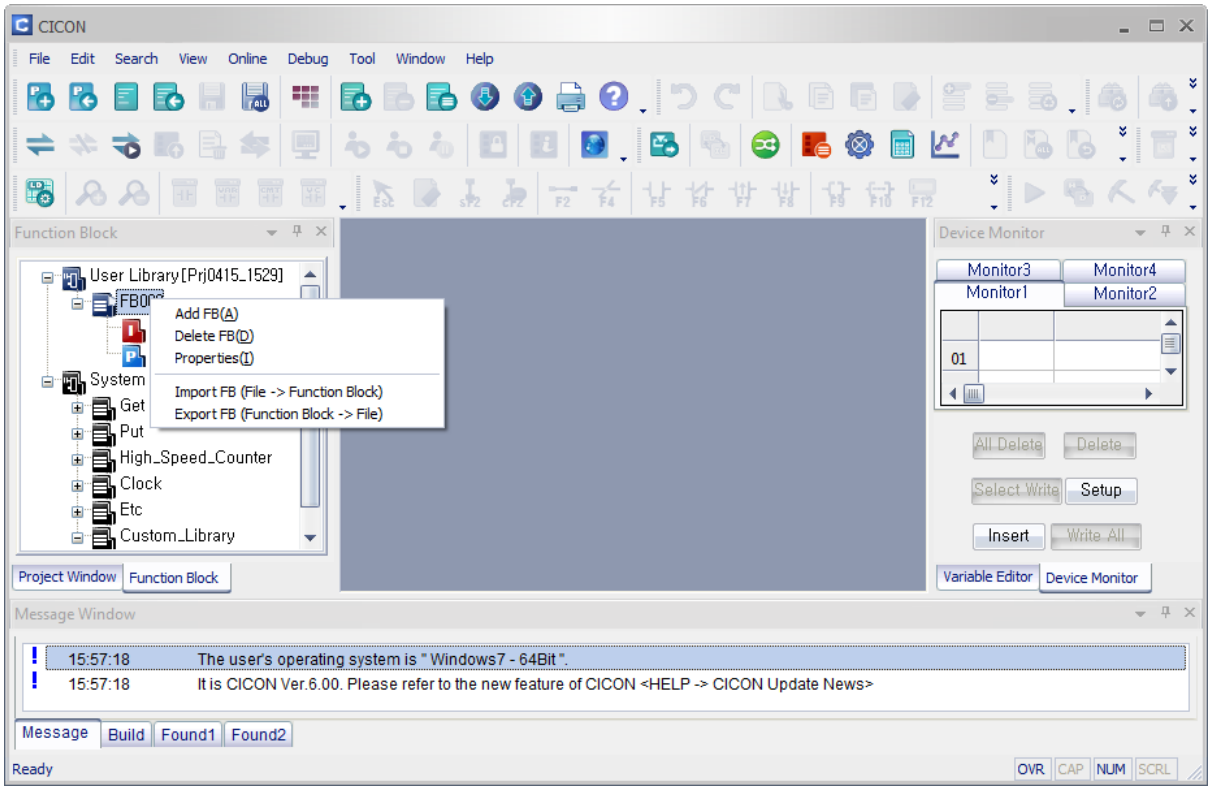
2) User System Library : If you export FB to File in User Library, FB can be saved in file or in User System Library. Once a FB is saved in System User Library, you are not able to edit the FB in this folder but you can only delete the FB. Whenever new project file is created, FB in System User Library and System Library will appears.

3) System Library : This is default FB that Cimon provides. You are not able to edit FB in the System Library. Whenever new project file is created, FB in System User Library and System Library will appears.

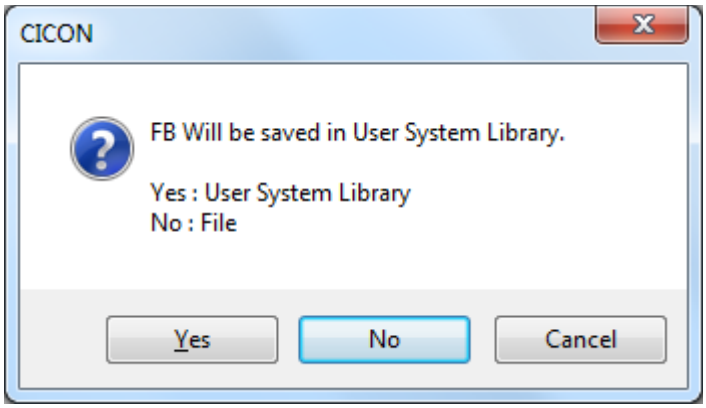
*** According to CPU type, Function Block in System Library can be used. If FB is not matched with CPU type, error message will pop up.**

1.2. Create User System Library

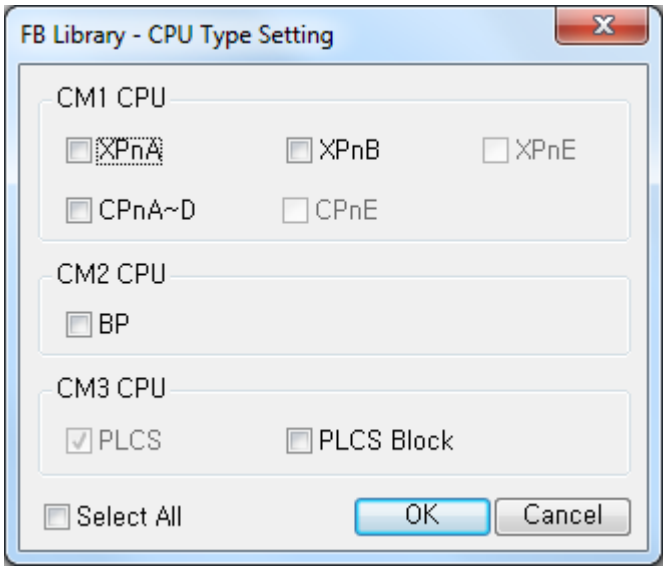
Right-click the FB and choose Export FB (Function Block → File)



Click Yes.



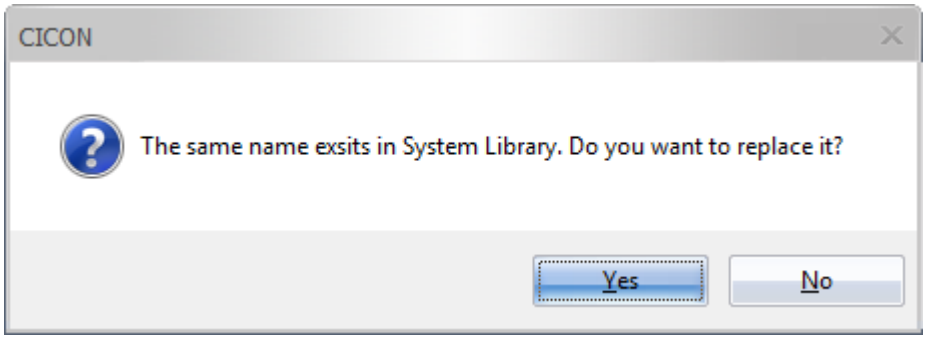
Choose the CPU type that supports this FB and then click OK.



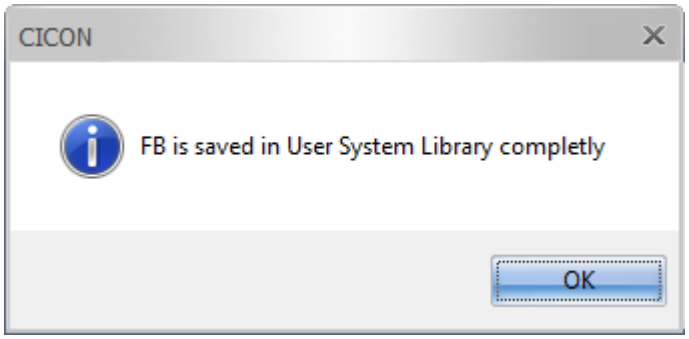
If the same FB name already exists in System Library, below message will pop up.

Click Yes, if you want to replace it.

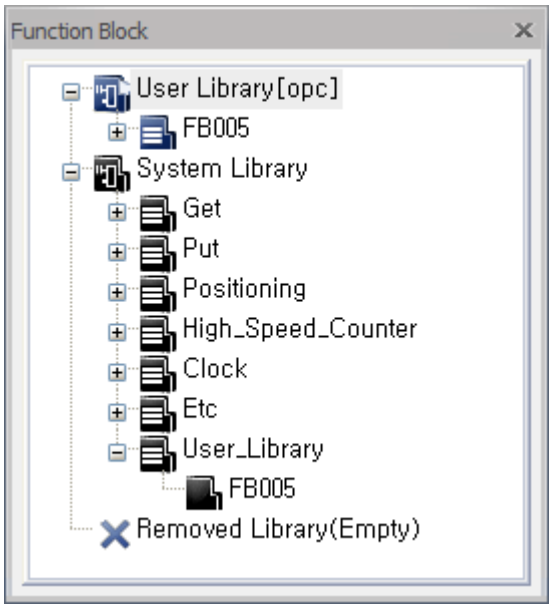
If you click No, FB will not be saved in User System Library.



If you click Yes, below message will appear.

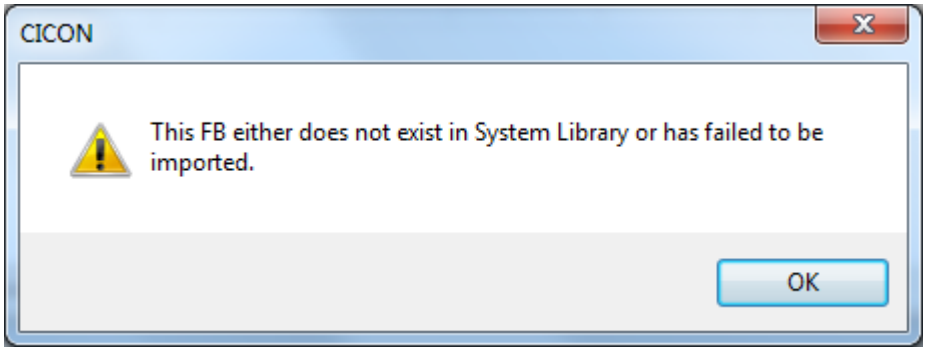


Now, you can see FB005 is duplicated and saved in User System Library.



- **How to delete FB in System Library**

FB in System Library is saved in CICON → SYSTEM_LIBRARY → FBLIB folder. In order to delete FB from System Library, delete the FB in FBLIB folder and restart CICON. If you do not restart CICON and try to use the deleted FB, below error message will appear.



1.3. Function Block type in System Library

1.3.1. GET : Digital conversion value

It is used to get value from Special module. There are two types FBs which get digital output value.

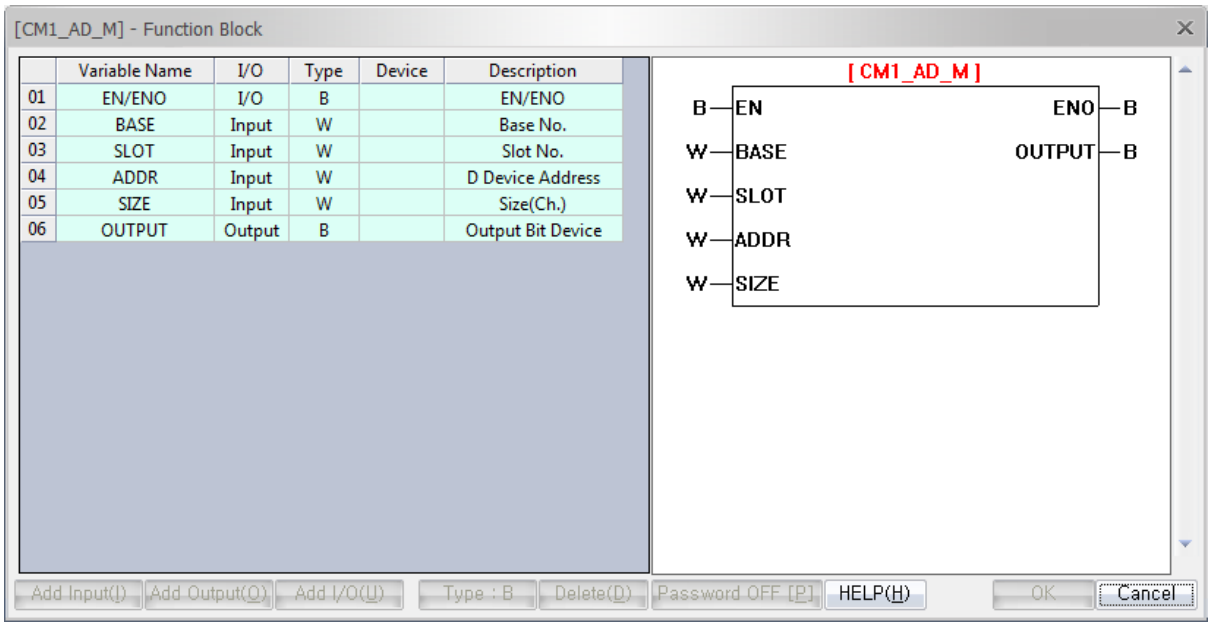
Example)

AD_M : It is used to get more than two digital values. D device is fixed to save this value. Type the address on “ADDR” and type number of channels on “SIZE”. (If you want to get the values from Channel 1~3, type 3. It will get a value from channel no.1 always.)

AD_S : It is used to get only one digital value. Output Device is fixed to save this value and can use Word type device (D15, M70, K110 and etc.). Type channel number on “CH” (If you want to get a value from Channel no.3, type 3)

1.3.1.1. AD_M

It has digital value from AD module and this digital value will be save in D device. It is used to get more than one digital value if the FB name is finished with “_M”.



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
OUTPUT	Output	Bit	When it works, it will be turned ON

- If you write wrong SLOT number or BASE number, CPU will have an error.
- According to CPU type, D device address range will be different.

• System Library type

CM1_AD_M / CM1_AD16Ch_M / CM2_AD_M /

CM2_ADDA_AD_M / CM3_AD_M / CM3_ADDA_AD_M

• Buffer Memory Index

CM1 AD : 11 ~ 18 (Ch.1~8 : Digital Output value)

CM1 AD16Ch : 11 ~ 26 (Ch.1~16 : Measured value)

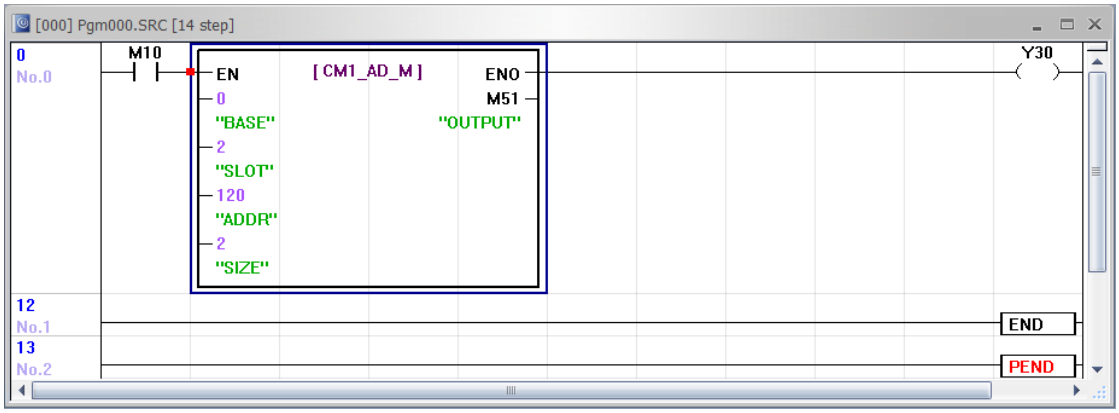
CM2 AD : 11 ~ 18 (Ch.1~8 : Digital Output value)

CM2 ADDA_AD : 7 ~ 8 (Ch.1~2 : Digital Output value)

CM3 AD : 0 ~ 3 (Ch.1~4 : Digital converted value)

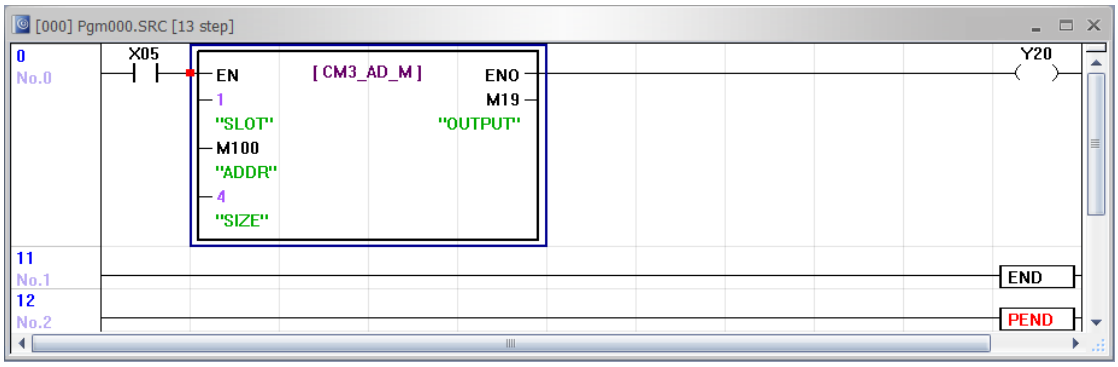
CM3 ADDA_AD : 0 ~ 1 (Ch.1~2 : Digital converted value AD)

Example) CM1_AD_M



You can get two digital value from Ch1 and Ch2 at Slot number2 in Local Base and save them to D120 and D121 in sequence. When it works, M51 will be turned ON.

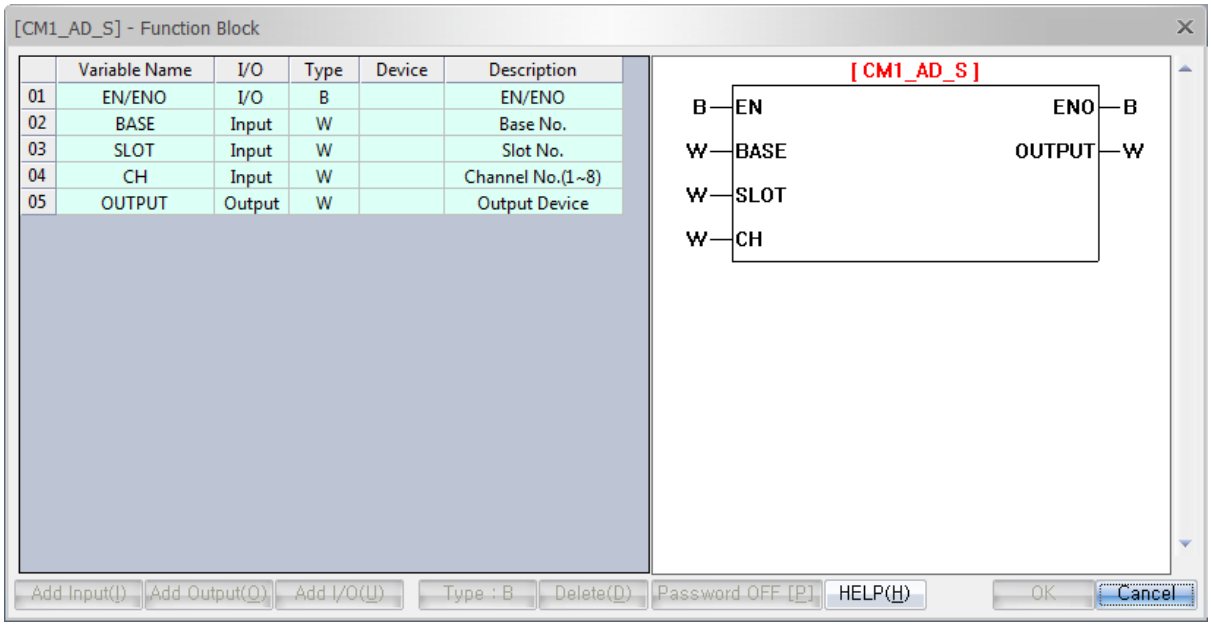
Example) CM3_AD_M



You can get 4 digital values from Ch1 to Ch4 at Slot number1 and save them to D address (M100) in sequence. If M100 is 24, digital value will be save in D24, D25, D26, and D27.

1.3.1.2. AD_S

It has only one digital value from AD module. It is used to get only one digital value if the FB name is finished with "_S".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
OUTPUT	Output	Word	Write Word type device address that you want to save the converted value (Except :X / F / TS / TC / CS / CC / S)

- If you write wrong SLOT number or BASE number, CPU will have an error.

• System Library type

CM1_AD_S / CM1_AD16Ch_S / CM2_AD_S / CM2_ADDA_AD_S / CM3_AD_S / CM3_ADDA_AD_S

• Buffer Memory Index

CM1 AD : 11 ~ 18 (Ch.1~8 : Digital Output value)

CM1 AD16Ch : 11 ~ 26 (Ch.1~16 : Measured value)

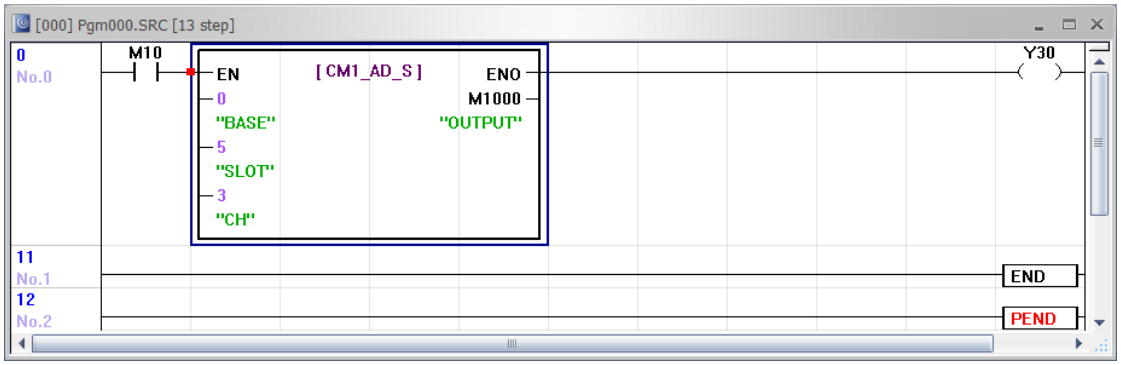
CM2 AD : 11 ~ 18 (Ch.1~8 : Digital Output value)

CM2 ADDA_AD : 7 ~ 8 (Ch.1~2 : Digital Output value)

CM3 AD : 0 ~ 3 (Ch.1~4 : Digital converted value)

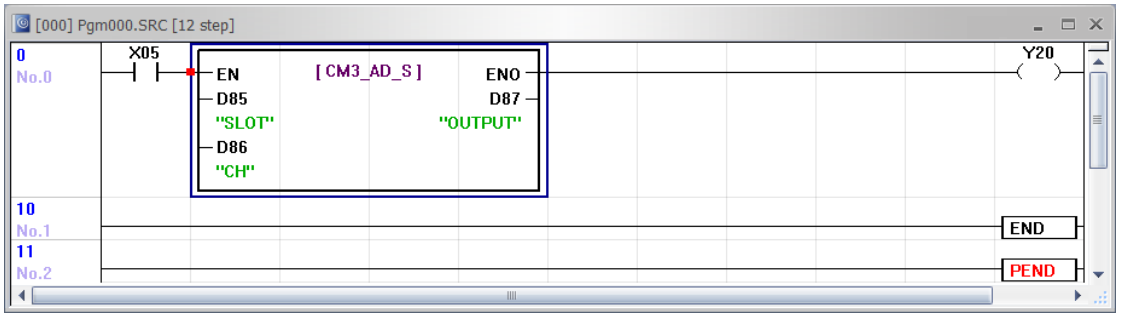
CM3 ADDA_AD : 0 ~ 1 (Ch.1~2 : Digital converted value AD)

Example) CM1_AD_S



You can get a digital value from Ch3 at Slot #5 in Local base and save it to M1000.

Example) CM3_AD_S

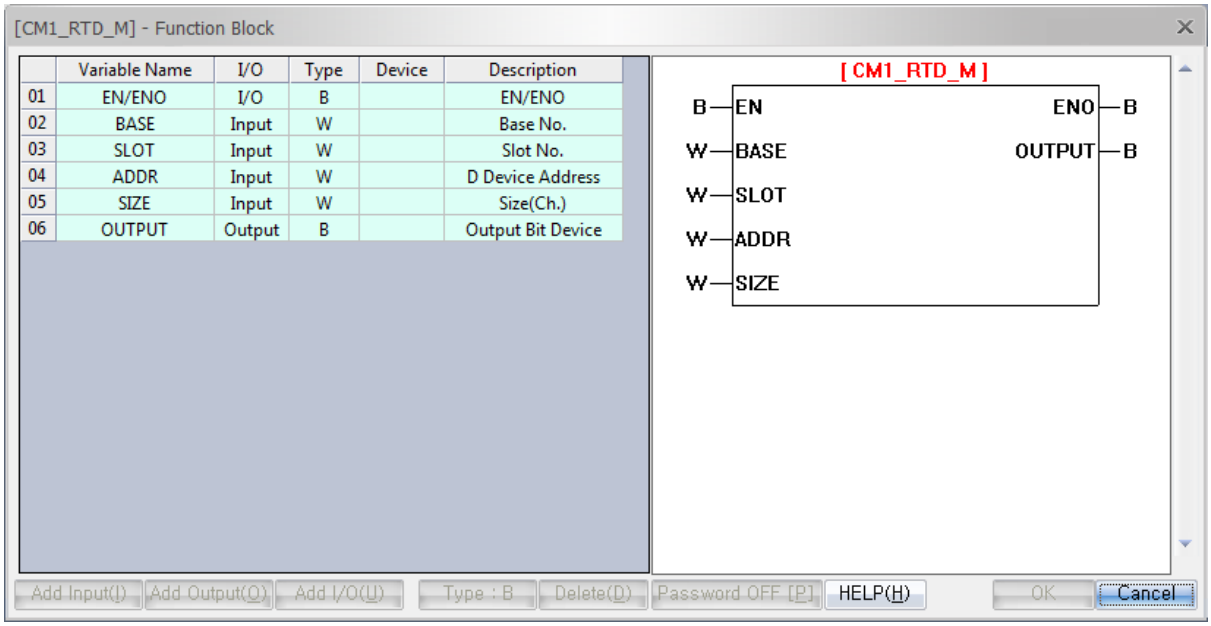


Slot : D85=7, Channel : D86=3

You can get a digital value from Ch3 at Slot #7 and save it to D87.

1.3.1.3. RTD_M

It has digital value from RTD module and this digital value will be save in D device. It is used to get more than two digital values if the FB name is finished with "_M".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
OUTPUT	Output	Bit	Not Used

- If you write wrong SLOT number or BASE number, CPU will have an error.

• System Library type

CM1_RTD_M / CM2_RTD_M / CM3_RTD_M

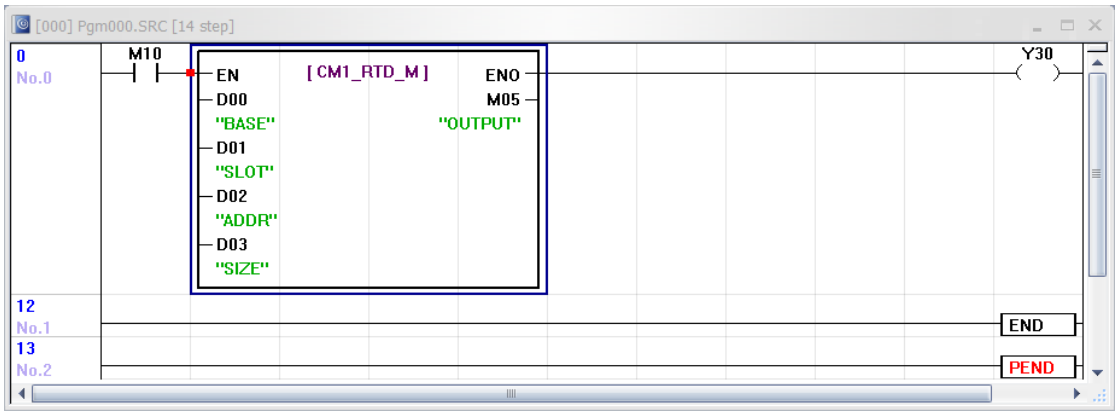
• Buffer Memory Index

CM1 RTD : 21 ~ 28 (Ch.1~8 : Digital converted value)

CM2 RTD : 21 ~ 28 (Ch.1~8 : Digital converted value)

CM3 RTD : 21 ~ 24 (Ch.1~4 : Digital converted value)

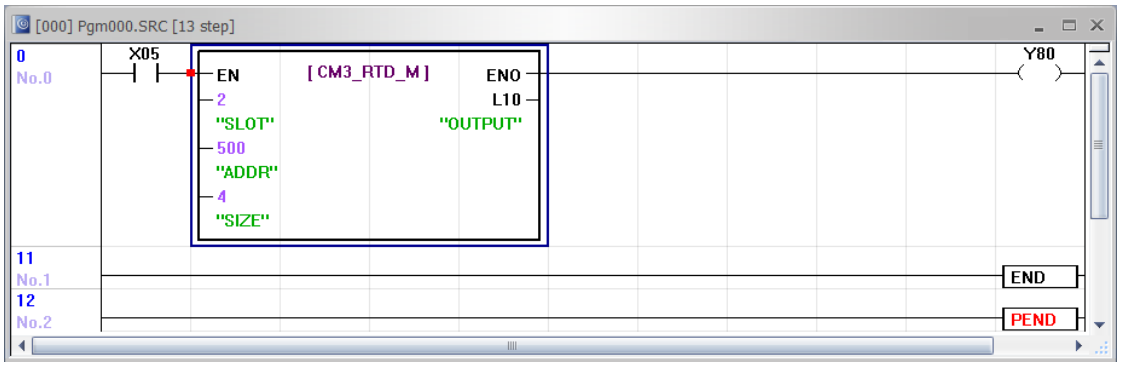
Example) CM1_RTD_M



Ex) Base: D00 = 1, Slot: D01 = 2, ADDR: D02 = 80, SIZE: D03 = 3

You can get 3 digital value from Ch1 to Ch3 at slot #2 in 1st expansion base and save them to D80, D81, and D82 in sequence. When it works, M05 will be turned ON.

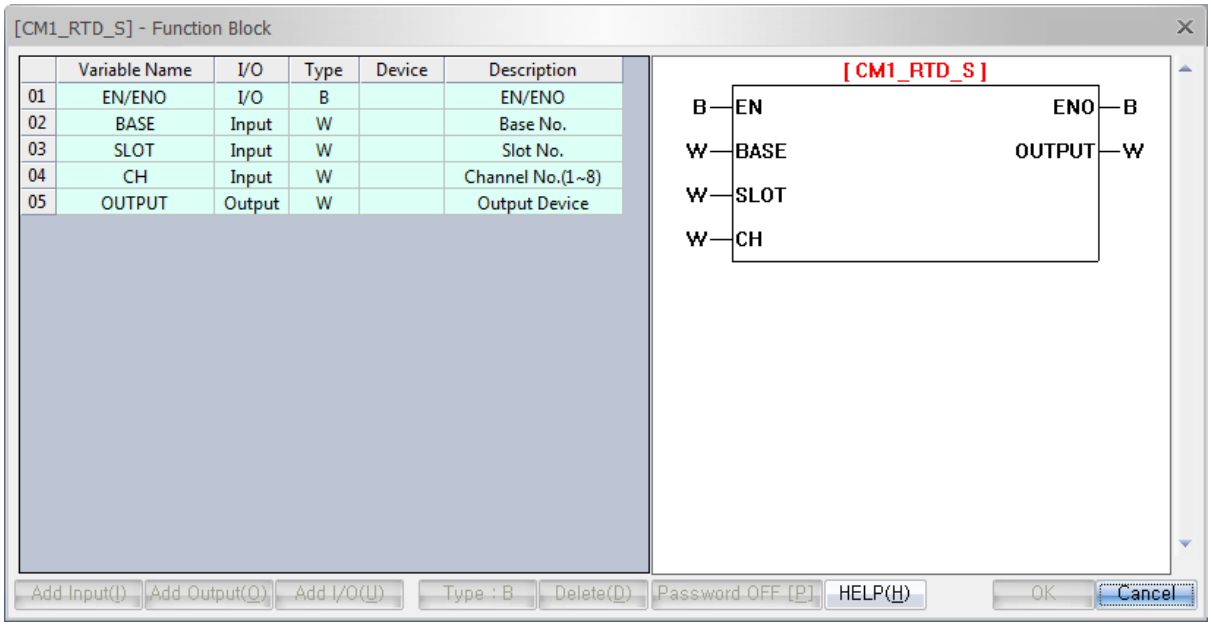
Example) CM3_RTD_M



You can get 4 digital values from Ch1 to Ch4 at slot #2 and save them to D500, D501, D502, and D503 in sequence. When it works, L10 will be turned ON.

1.3.1.4. RTD_S

It has only one digital value from RTD module. It is used to get only one digital value if the FB name is finished with "_S".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
OUTPUT	Output	Word	Write Word type device address that you want to save the converted value (Except :X / F / TS / TC / CS / CC / S)

- If you write wrong SLOT number or BASE number, CPU will have an error.

• System Library type

CM1_RTD_S / CM2_RTD_S / CM3_RTD_S

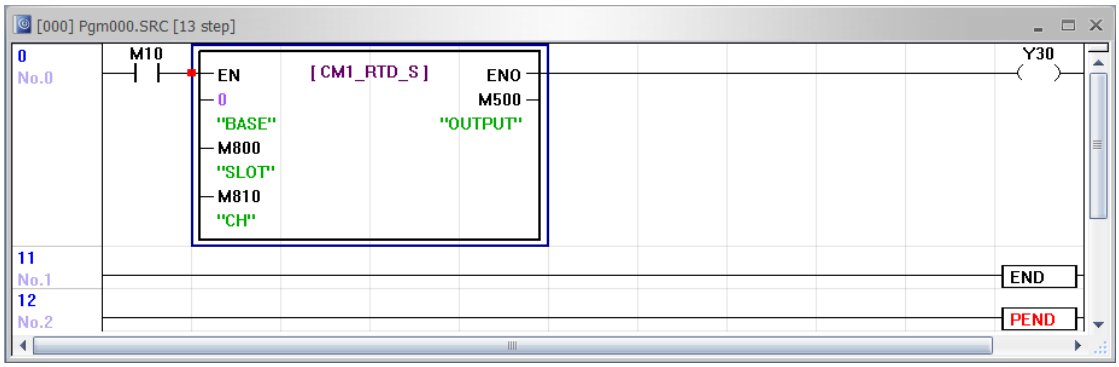
• Buffer Memory Index

CM1 RTD : 21 ~ 28 (Ch.1~8 : Digital conversion value)

CM2 RTD : 21 ~ 28 (Ch.1~8 : Digital conversion value)

CM3 RTD : 21 ~ 24 (Ch.1~4 : Digital conversion value)

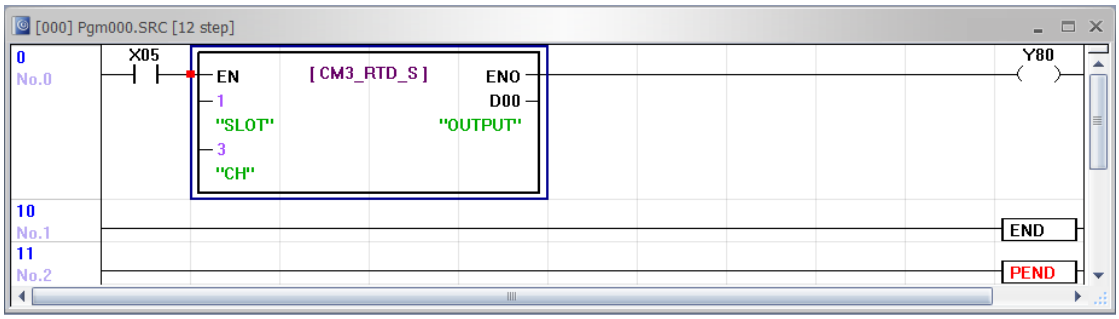
Example) CM1_RTD_S



Base : 0 / Slot : M800 = 8 / CH : M810 = 4

You can get a value from Ch4 at slot #8 in Local base and save it to M500.

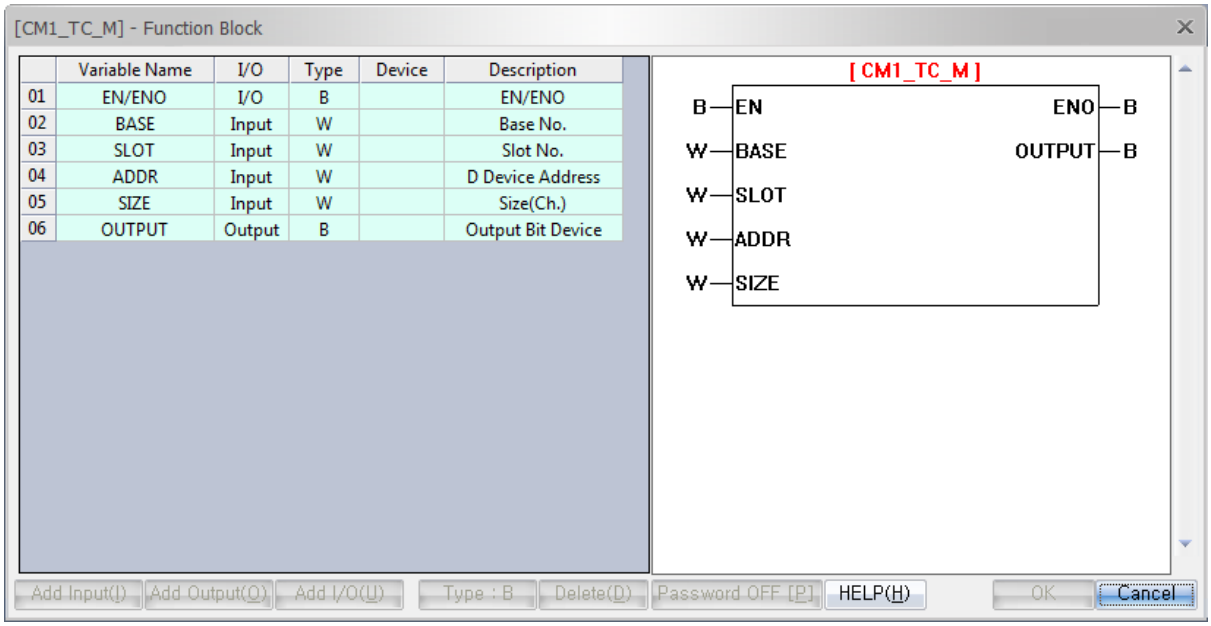
Example) CM3_RTD_S



You can get a digital value from Ch3 at Slot #1 and save it to D00.

1.3.1.5. TC_M

It has digital value from TC module and this digital value will be save in D device. It is used to get more than two digital values if the FB name is finished with "_M".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
OUTPUT	Output	Bit	When it works, it will be turned ON

- If you write wrong SLOT number or BASE number, CPU will have an error.

• System Library type

CM1_TC_M / CM2_TC_M / CM3_TC_M

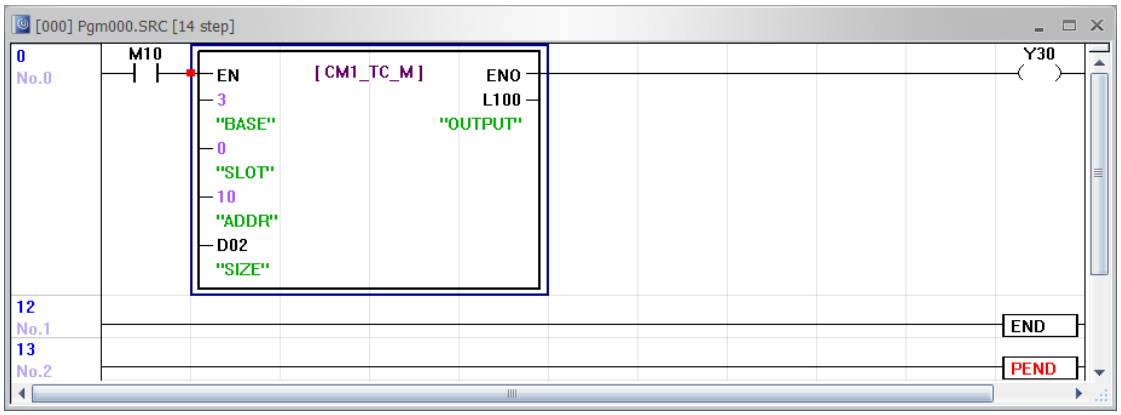
• Buffer Memory Index

CM1 TC : 21 ~ 28 (Ch.1~8 : Digital conversion value)

CM2 TC : 21 ~ 28 (Ch.1~8 : Digital conversion value)

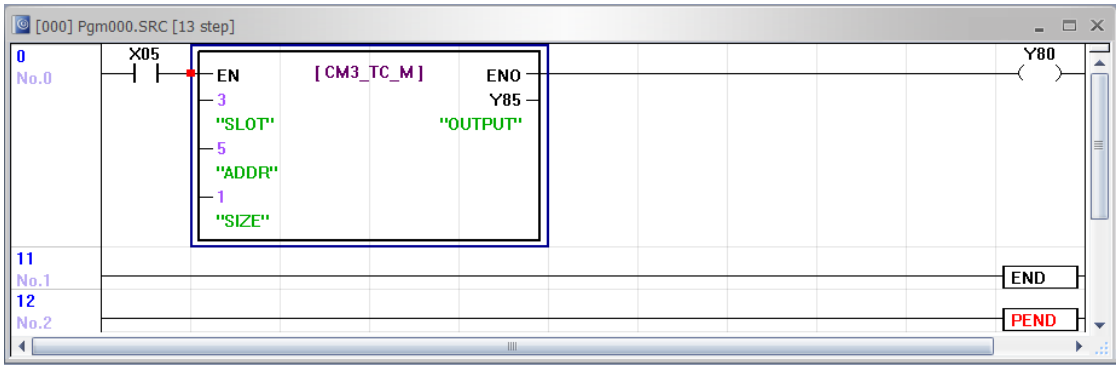
CM3 TC : 21 ~ 24 (Ch.1~4 : Digital conversion value)

Example) CM1_TC_M



If D02 is 3, you can get 3 digital value from Ch1 to Ch3 at slot #0 in 3rd expansion base and save them to D10, D11 and D12 in sequence. When it works, L100 will be turned ON.

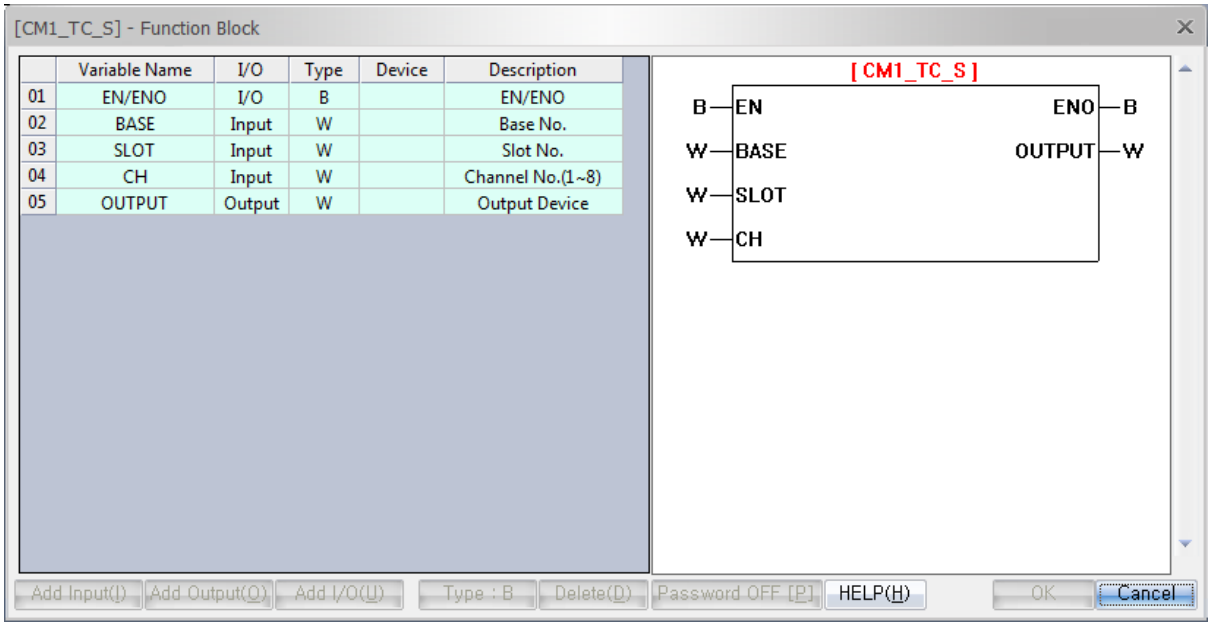
Example) CM3_TC_M



You can get a digital value from Ch1 at slot #3 and save it to D5. When it works, Y85 will be turned ON.

1.3.1.6. TC_S

It has only one digital value from TC module. It is used to get only one digital value if the FB name is finished with "_S".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
OUTPUT	Output	Word	Write Word type device address that you want to save the converted value (Except :X / F / TS / TC / CS / CC / S)

• System Library type

CM1_TC_S / CM2_TC_S / CM3_TC_S

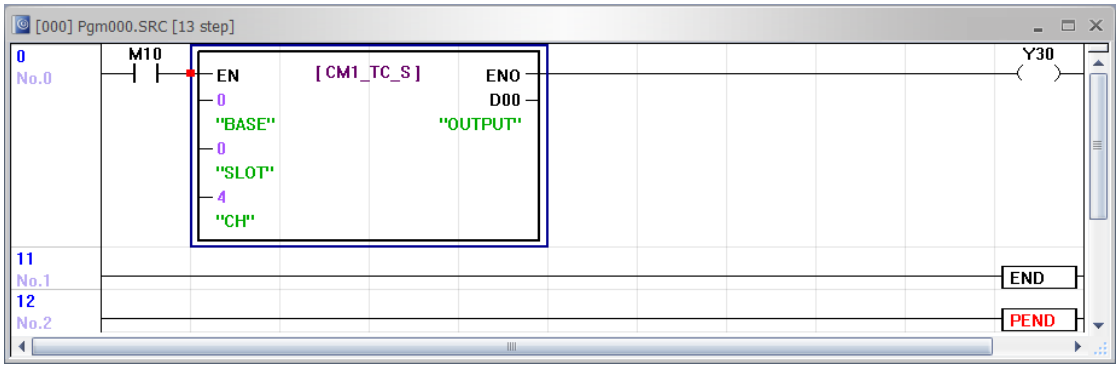
• Buffer Memory Index

CM1 TC : 21 ~ 28 (Ch.1~8 : Digital conversion value)

CM2 TC : 21 ~ 28 (Ch.1~8 : Digital conversion value)

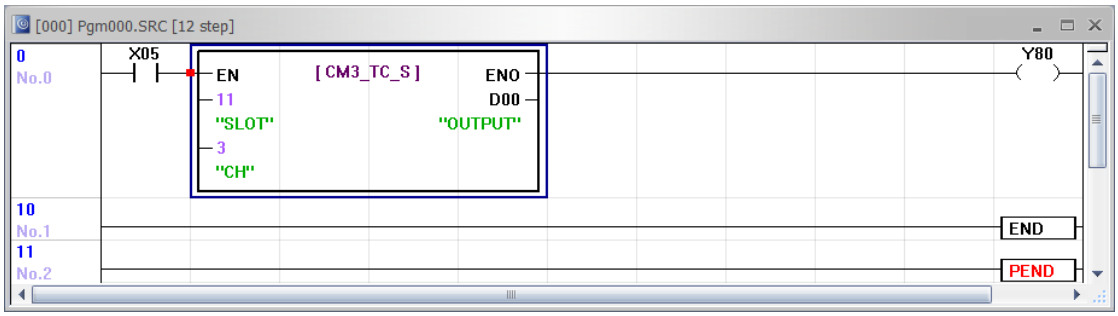
CM3 TC : 21 ~ 24 (Ch.1~4 : Digital conversion value)

Example) CM1_TC_S



You can get a digital value from Ch4 at slot #0 in Local base and save it to D00. When it works, D00 will be turned ON.

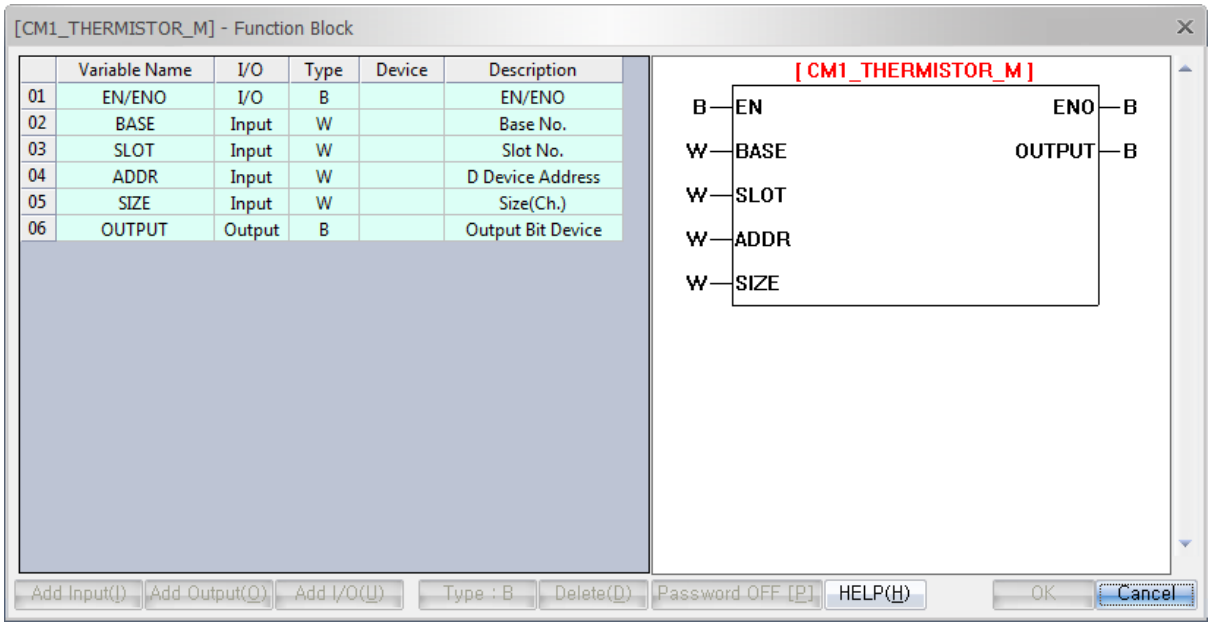
Example) CM3_TC_S



You can get a digital value from Ch3 at slot #11 and save it to D00.

1.3.1.7. THERMISTOR_M

It has digital value from Thermistor module and this digital value will be save in D device. It is used to get more than two digital values if the FB name is finished with "_M".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
OUTPUT	Output	Bit	Not Used

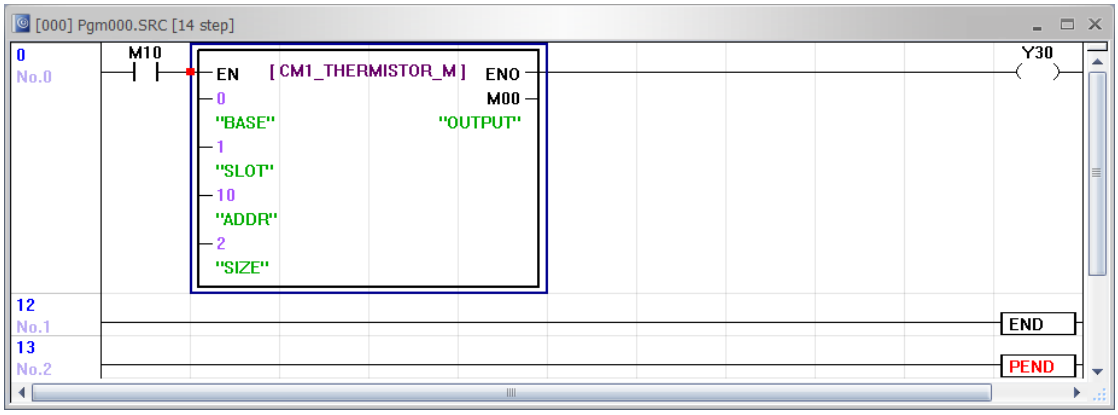
• System Library type

CM1_THERMISTOR_M

• Buffer Memory Index

CM1 THERMISTOR : 21 ~ 28 (Ch.1~8 : Digital conversion value)

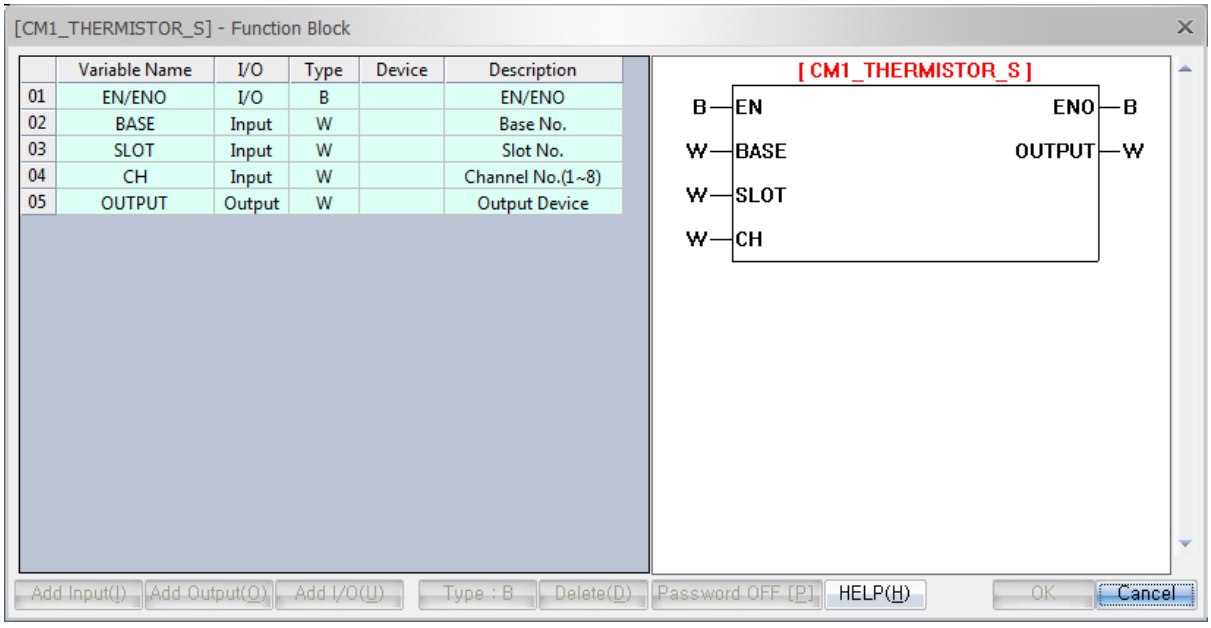
Example) CM1_THERMISTOR_M



You can get a digital value from Ch1 and Ch2 at slot #1 in Local base and save them to D10 and D11 in sequence. When it works, D00 will be turned ON.

1.3.1.8. THERMISTOR_S

It has only one digital value from Thermistor module. It is used to get only one digital value if the FB name is finished with "_S".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
OUTPUT	Output	Word	Write Word type device address that you want

			to save the converted value (Except :X / F / TS / TC / CS / CC / S)

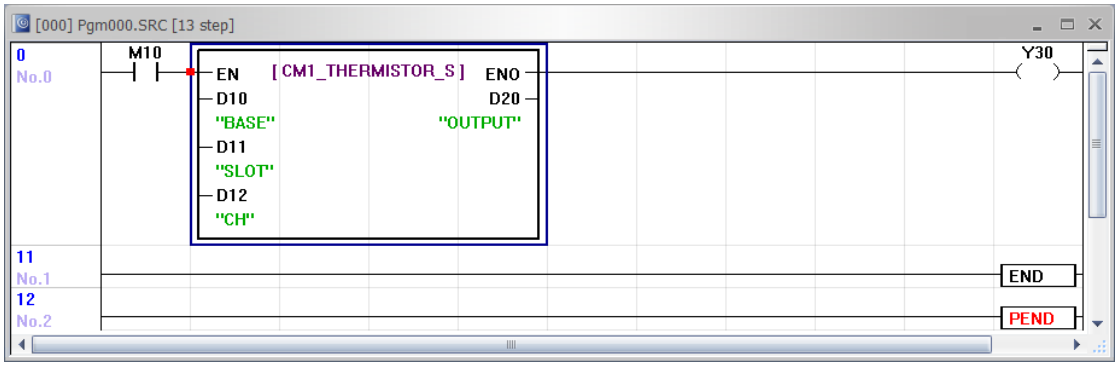
• System Library type

CM1_THERMISTOR_S

• Buffer Memory Index

CM1 THERMISTOR : 21 ~ 28 (Ch.1~8 : Digital conversion value)

Example) CM1_THERMISTOR_S

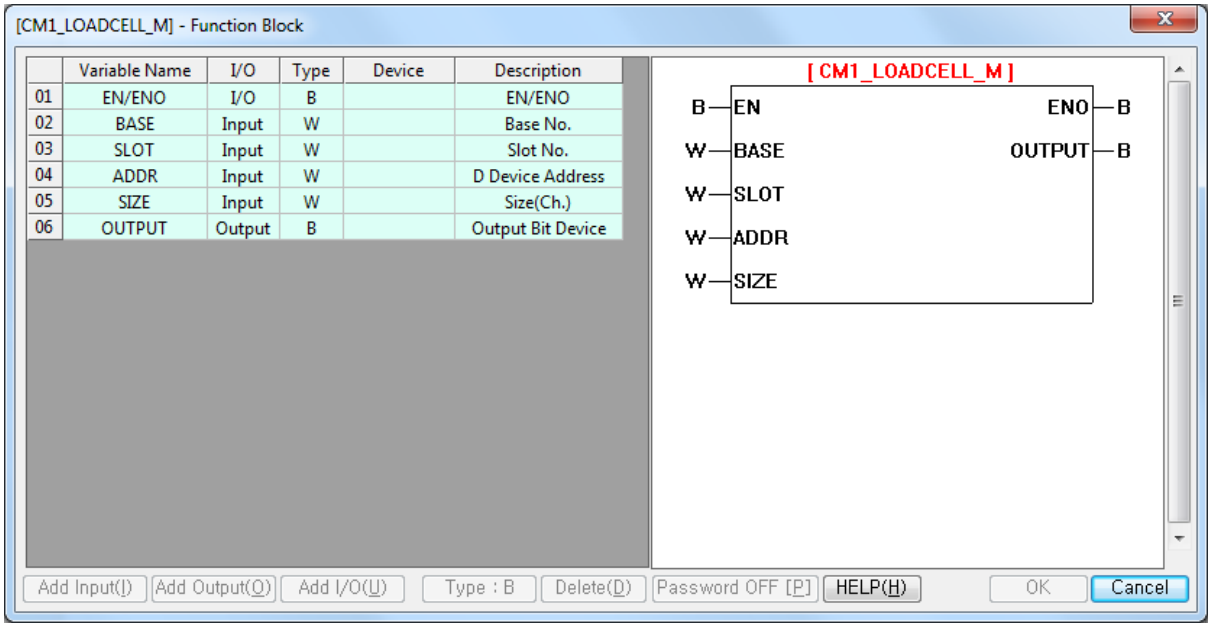


BASE (D10)=2, SLOT (D11)=3, Channel (D12)=1

You can get a digital value from Ch1 at slot #3 in 2nd expansion base and save it to D20.

1.3.1.9. LOADCELL_M

It has digital value from Loadcell module and this digital value will be save in D device. It is used to get more than two digital values if the FB name is finished with "_M".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
OUTPUT	Output	Bit	Not Used

Tip : The converted value is composed high and low. (Double Word)

For example, if you write 150 at the ADDR and 2 at the SIZE, the value will be saved as below.

Channel1 AD converted high word value → D150

Channel1 AD converted low word value → D151

Channel2 AD converted high word value → D152

Channel2 AD converted low word value → D153

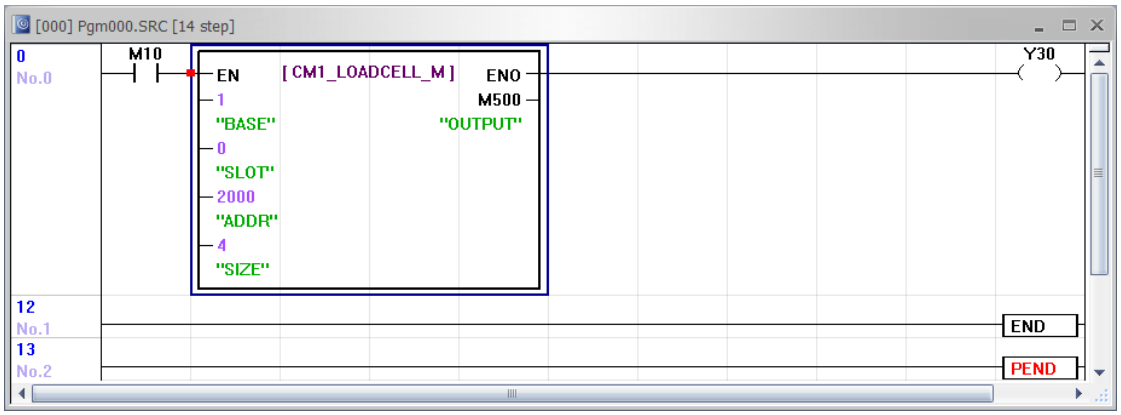
• System Library type

CM1_LOADCELL_M

• Buffer Memory Index

CM1 Loadcell : 12 / 27 / 42 / 57 (Ch.1~4 : AD converted value)

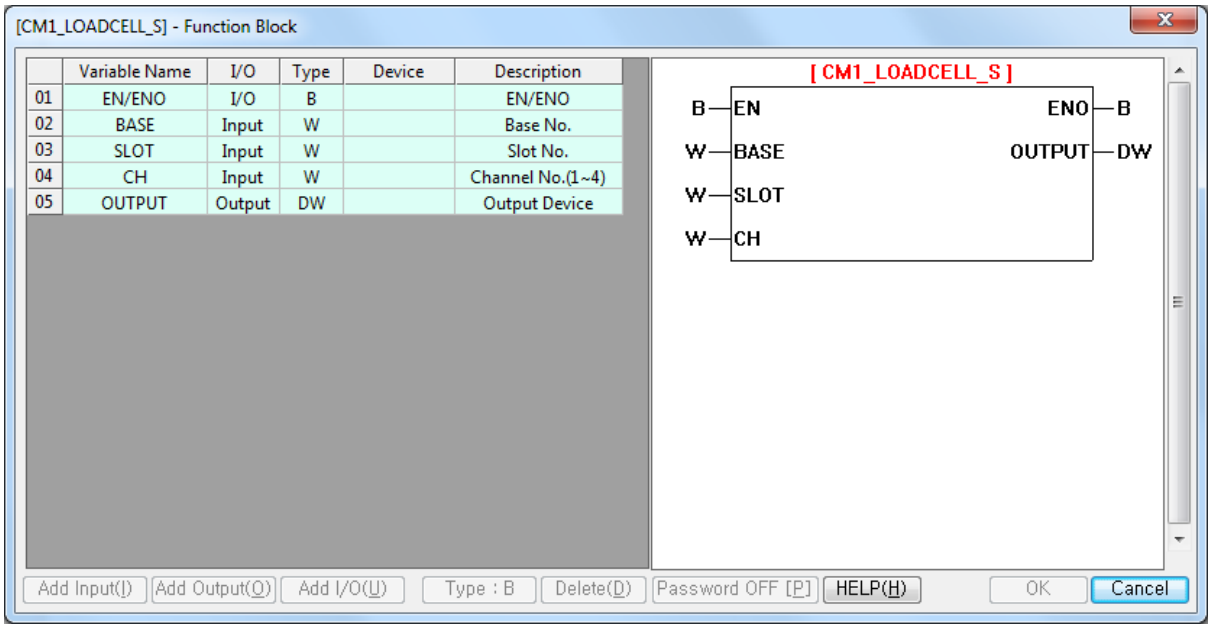
Example) CM1_LOADCELL_M



You can get a digital value from Ch1 to Ch4 at slot #0 in 1st expansion base and save them to D2000, D2001, D2002, and D2003 in sequence. When it works, M500 will be turned ON.

1.3.1.10. LOADCELL_S

It has only one detected weight value from Loadcell module. It is used to get only one detected weight value if the FB name is finished with "_S".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
OUTPUT	Output	Word	Write Word type device address that you want to save the converted value (Except :X / F / TS / TC / CS / CC / S)

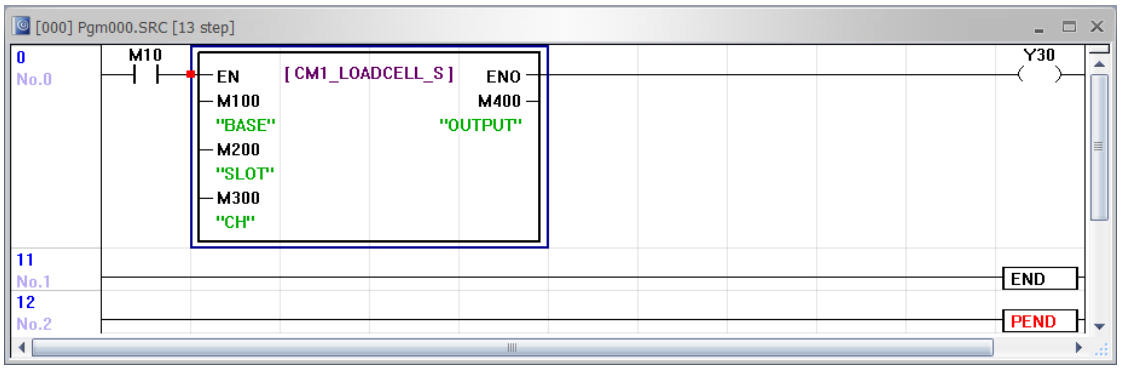
• System Library type

CM1_LOADCELL_S

• Buffer Memory Index

CM1 Loadcell : 12 / 27 / 42 / 57 (Ch.1~4 : AD converted value)

Example) CM1_LOADCELL_S

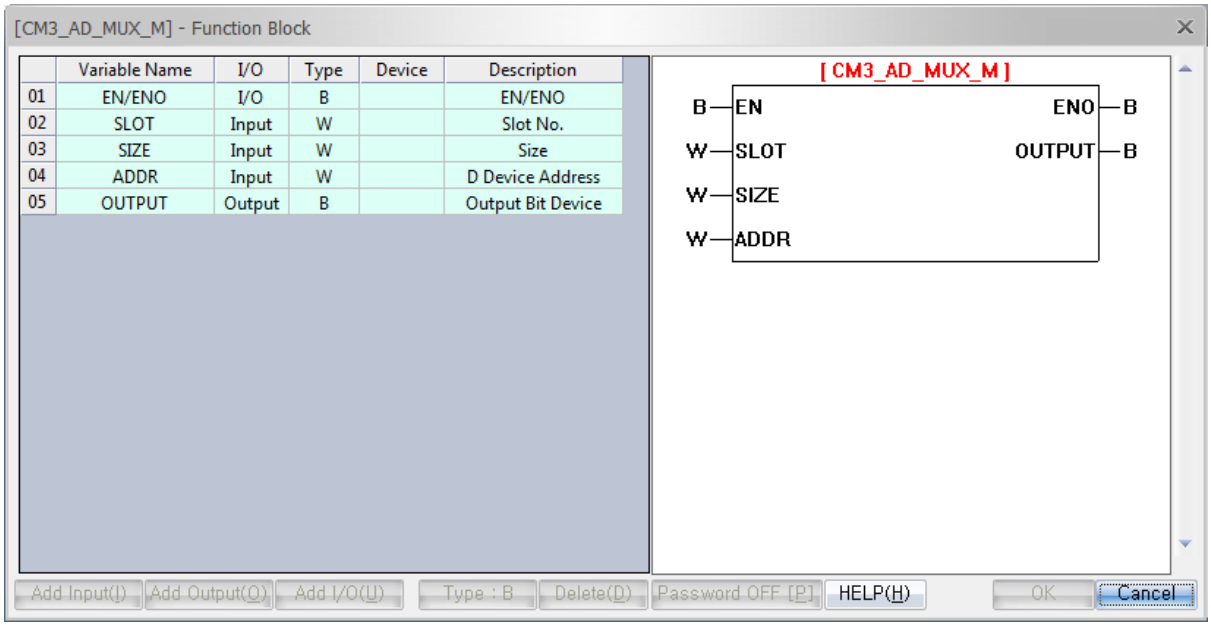


BASE (M100)=0, SLOT (M200)=5, Channel (M300)=4

You can get a digital value from Ch4 at slot #5 in local base and save it to M400.

1.3.1.11. AD_MUX_M

It has relay count value from AD MUX module. It is used to get more than two digital values if the FB name is finished with "_M".



Variable Name	I/O	Type	Device
SLOT	Input	Word	Write Slot number CM3 : 1 ~ 11
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
OUTPUT	Output	Bit	Not Used

Tip : The converted value is composed high and low. (Double Word)

For example, if you write 150 at the ADDR and 2 at the SIZE, the value will be saved as below.

Channel1 AD Relay count high value → D150

Channel1 AD Relay count low value → D151

Channel2 AD Relay count high value → D152

Channel2 AD Relay count low value → D153

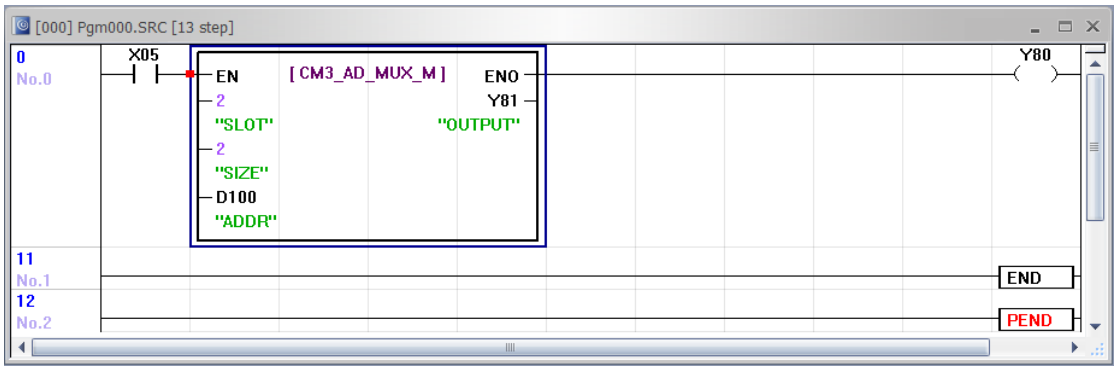
• System Library type

CM3_AD_MUX_M

• Buffer Memory Index

CM3_AD_MUX : 1 ~ 8 (Ch.1~4 : Relay Count High / Low) – Double Word

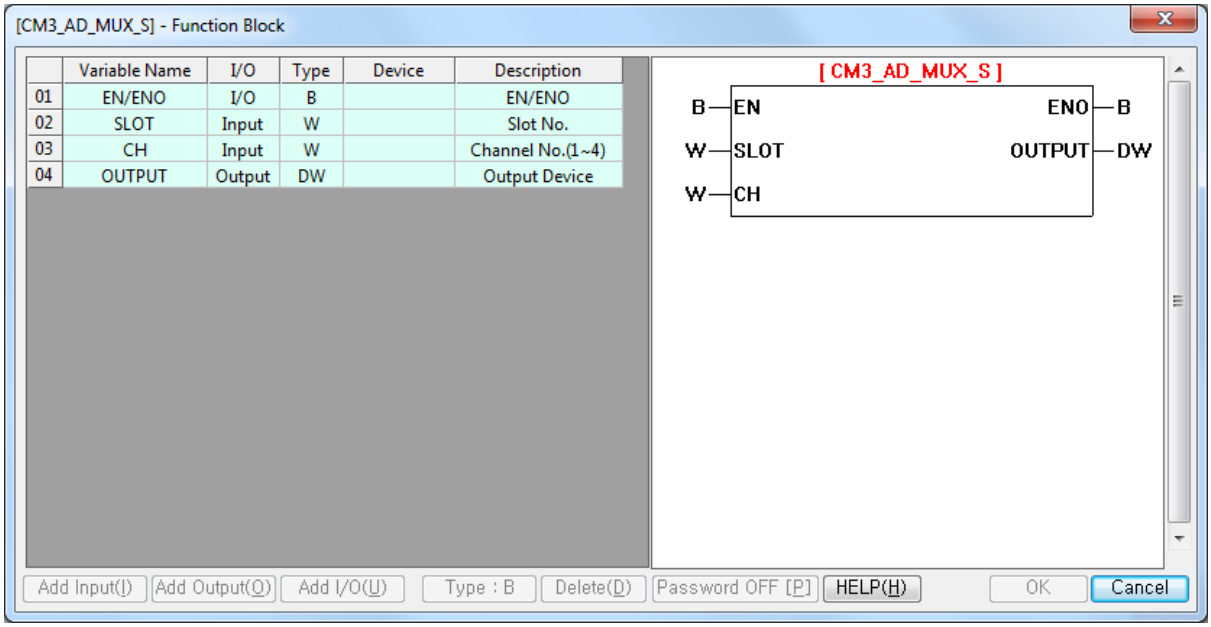
Example) CM3_AD_MUX_M



You can get Relay Count High and Low value from Ch1 and Ch2 at the slot#2 and save them to D100, D101, D102, and D103 in sequence (2 Words per a channel). When it works, Y81 will be turned ON.

1.3.1.12. AD_MUX_S

It has relay count value from AD MUX module. It is used to get only one detected value if the FB name is finished with "_S".



Variable Name	I/O	Type	Device
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
OUTPUT	Output	Word	Write Word type device address that you want to save the converted value (Except :X / F / TS / TC / CS / CC / S)

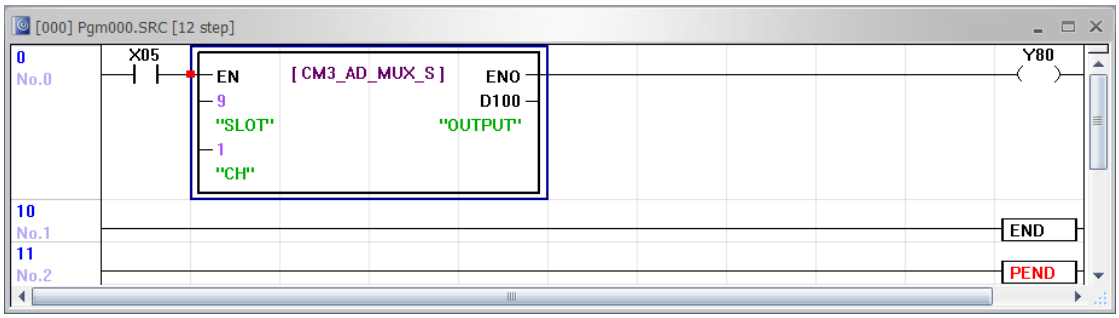
• System Library type >

CM3_AD_MUX_S

• Buffer Memory Index >

CM3_AD_MUX : 1 ~ 8 (Ch.1~4 : Relay Count High / Low) – Double Word

Example) CM3_AD_MUX_S



You can get Relay Count High and Low value from Ch1 at the slot #9 and save them to D100 and D101 in sequence.

1.3.2. GET : Temperature detected value

It is used to get value from temperature module. There are two types FBs which get digital output value.

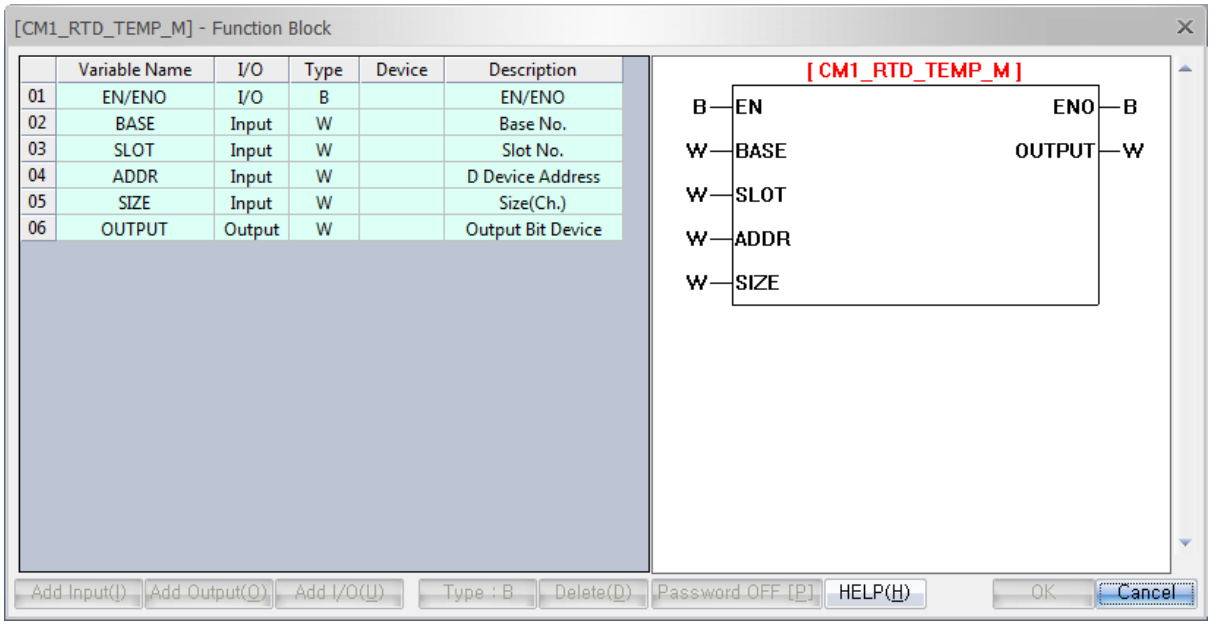
Example)

AD_M : It is used to get more than two digital values. D device is fixed to save this value. Type the address on “ADDR” and type number of channels on “SIZE”. (If you want to get the values from Channel 1~3, type 3. It will get a value from channel no.1 always.)

AD_S : It is used to get only one digital value. Output Device is fixed to save this value and can use Word type device (D15, M70, K110 and etc.). Type channel number on “CH” (If you want to get a value from Channel no.3, type 3)

1.3.2.1. RTD_TEMP_M

It has detected temperature value (°C) from RTD module and this digital value will be save in D device. It is used to get more than two digital values if the FB name is finished with “_M”.



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
OUTPUT	Output	Bit	Not Used

- If you write wrong SLOT number or BASE number, CPU will have an error.

• System Library type

CM1_RTD_TEMP_M / CM2_RTD_ TEMP_M / CM3_RTD_ TEMP_M

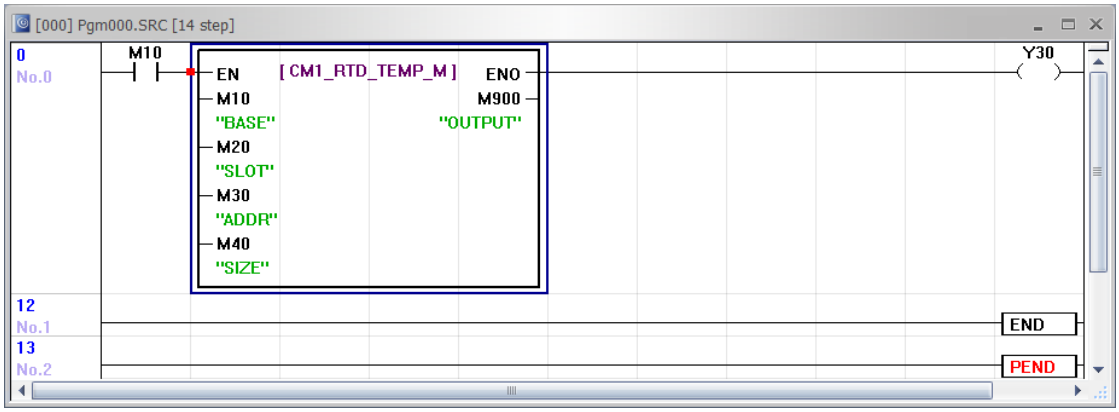
• Buffer Memory Index

CM1 RTD : 1 ~ 8 (Ch.1~8 : Detected temp. value)

CM2 RTD : 1 ~ 8 (Ch.1~8 : Detected temp. value)

CM3 RTD : 1 ~ 4 (Ch.1~4 : Detected temp. value)

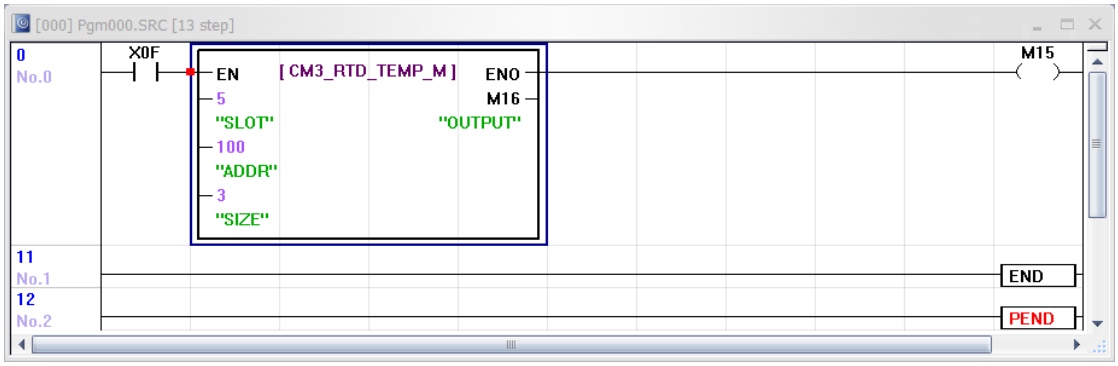
Example) CM1_RTD_TEMP_M



BASE (M10)=5, SLOT (M20)=1, ADDR (M30)=5, SIZE(M40)=2

You can get temperature values(°C) from Ch1 and Ch2 at the slot #1 in the 5th expansion base and save them to D5 and D6 in sequence. When it works, M900 will be turned ON.

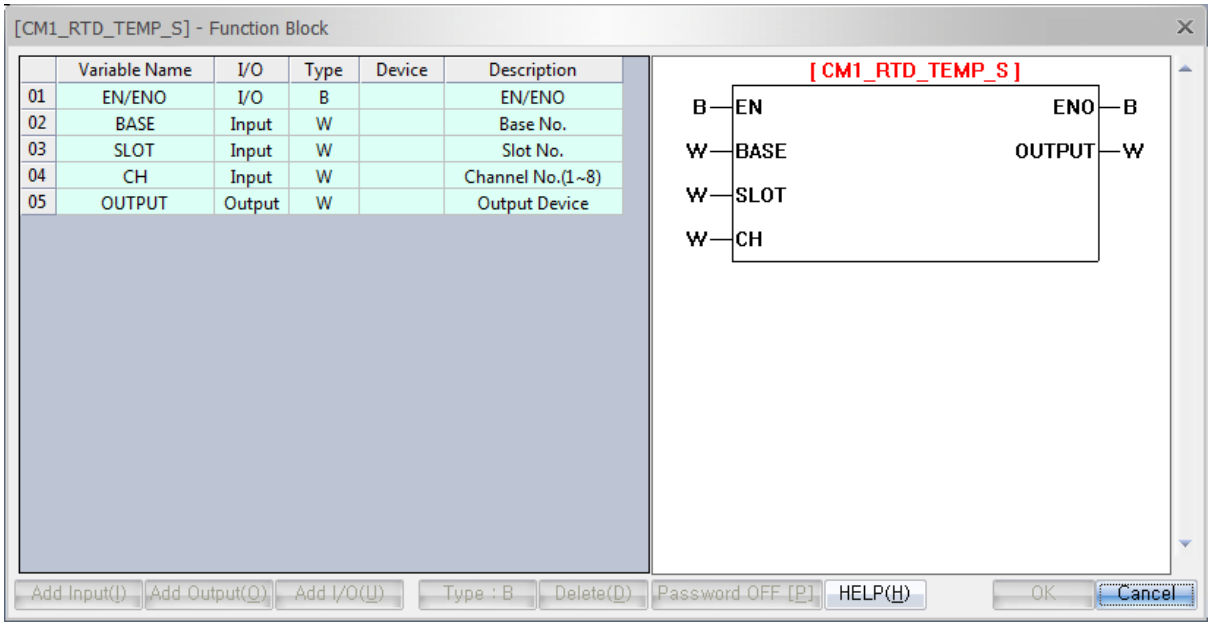
Example) CM3_RTD_TEMP_M



You can get temperature values(°C) from Ch1 to Ch3 at the slot#5 and save them to D100, D101 and D102 in sequence. When it works, M16 will be turned ON.

1.3.2.2. RTD_TEMP_S

It has only one detected temperature value(°C) from RTD module. It is used to get only one detected temperature value if the FB name is finished with "_S".


[CM1_RTD_TEMP_S] - Function Block
Variable Name | I/O | Type | Device | Description
01 | EN/ENO | I/O | B | EN/ENO
02 | BASE | Input | W | Base No.
03 | SLOT | Input | W | Slot No.
04 | CH | Input | W | Channel No.(1~8)
05 | OUTPUT | Output | W | Output Device
[CM1_RTD_TEMP_S]
B EN
W BASE
W SLOT
W CH
ENO B
OUTPUT W
Add Input(I)
Add Output(O)
Add I/O(U)
Type : B
Delete(D)
Password OFF [P]
HELP(H)
OK
Cancel

Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
OUTPUT	Output	Word	Write Word type device address that you want to save the converted value (Except :X / F / TS / TC / CS / CC / S)

- If you write wrong SLOT number or BASE number, CPU will have an error.

• System Library type

CM1_RTD_TEMP_S / CM2_RTD_ TEMP_S / CM3_RTD_ TEMP_S

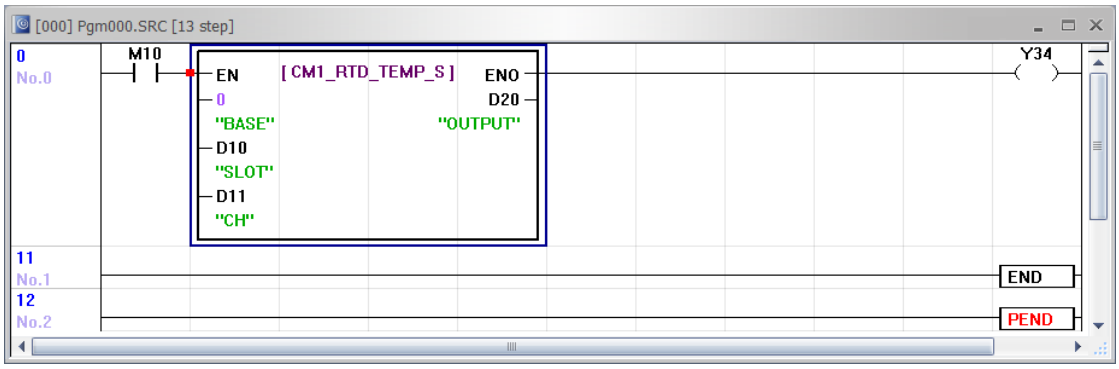
• Buffer Memory Index

CM1 RTD : 1 ~ 8 (Ch.1~8 : Detected temp. value)

CM2 RTD : 1 ~ 8 (Ch.1~8 : Detected temp. value)

CM3 RTD : 1 ~ 4 (Ch.1~4 : Detected temp. value)

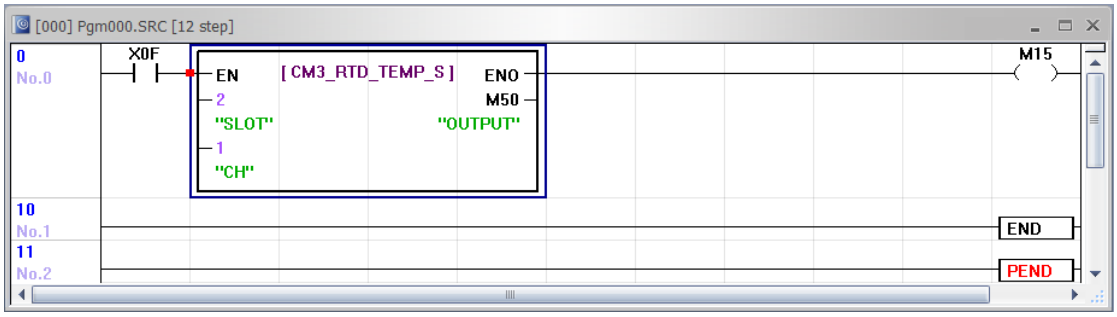
Example) CM1_RTD_TEMP_S



BASE (D10)=2, SLOT (D11)=2

You can get a temperature value(°C) from Ch2 at the slot#2 in the local base and save it to D20 in sequence.

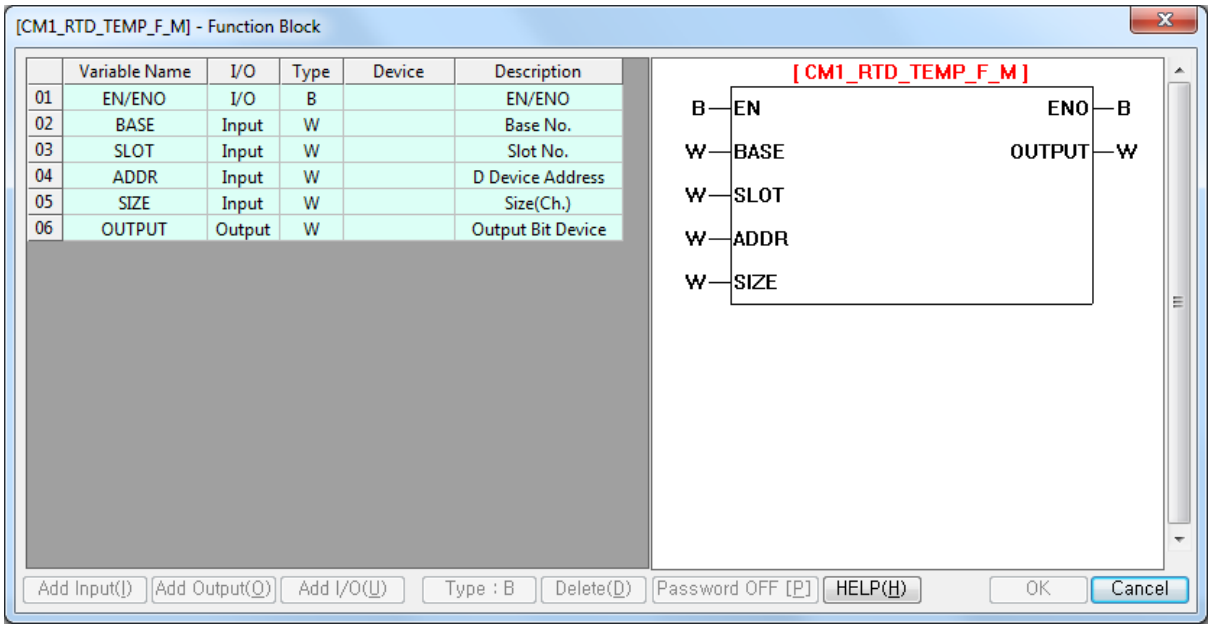
Example) CM3_RTD_S



You can get a temperature value(°C) from Ch1 at the slot#2 and save it to M50.

1.3.2.3. RTD_TEMP_F_M

It has detected temperature value(°F) from RTD module and this digital value will be save in D device. It is used to get more than two digital values if the FB name is finished with "_M".


[CM1_RTD_TEMP_F_M] - Function Block
Variable Name | I/O | Type | Device | Description
01 | EN/ENO | I/O | B | EN/ENO
02 | BASE | Input | W | Base No.
03 | SLOT | Input | W | Slot No.
04 | ADDR | Input | W | D Device Address
05 | SIZE | Input | W | Size(Ch.)
06 | OUTPUT | Output | W | Output Bit Device
[CM1_RTD_TEMP_F_M]
B EN
W BASE
W SLOT
W ADDR
W SIZE
ENO B
OUTPUT W
Add Input(I)
Add Output(O)
Add I/O(U)
Type : B
Delete(D)
Password OFF [P]
HELP(H)
OK
Cancel

Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16 (There is no Base number for CM2 and CM3)
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
OUTPUT	Output	Bit	Not Used

- If you write wrong SLOT number or BASE number, CPU will have an error.

• System Library type

CM1_RTD_TEMP_F_M / CM2_RTD_ TEMP_ F_M / CM3_RTD_ TEMP_ F_M

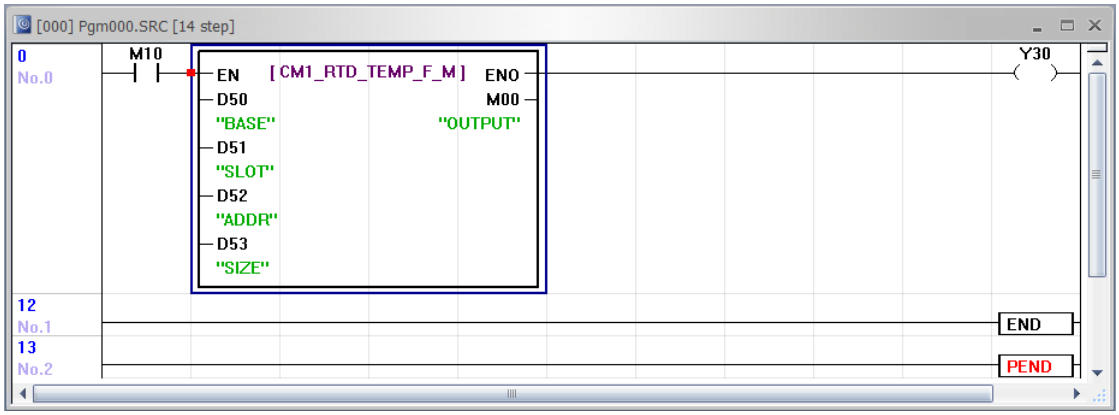
• Buffer Memory Index

CM1 RTD : 11 ~ 14 (Ch.1~8 : Detected temp. (°F) value)

CM2 RTD : 11 ~ 18 (Ch.1~8 : Detected temp. (°F) value)

CM3 RTD : 11 ~ 14 (Ch.1~4 : Detected temp. (°F) value)

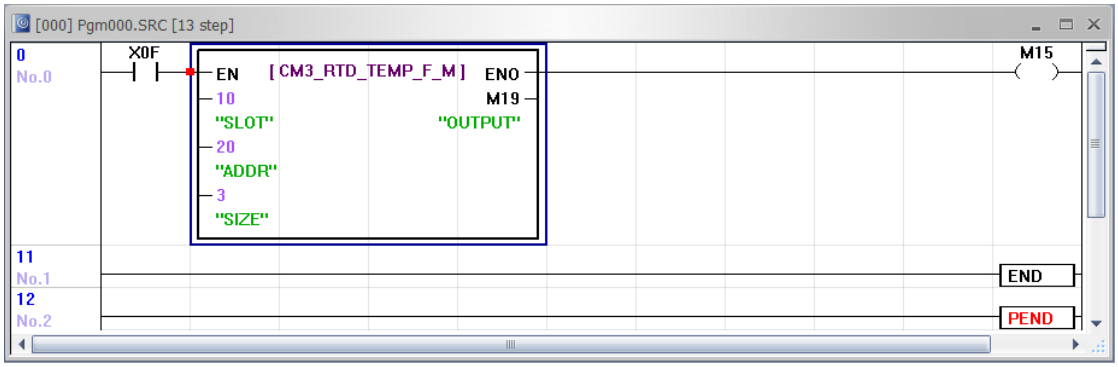
Example) CM1_RTD_TEMP_F_M



BASE (D50)=2, SLOT (D51)=1, ADDR (D52)=3, SIZE(D53)=4

You can get temperature values (°F) from Ch1 to Ch4 at the slot #1 in the 2nd expansion base and save them to D3, D4, D5, and D6 in sequence. When it works, M00 will be turned ON.

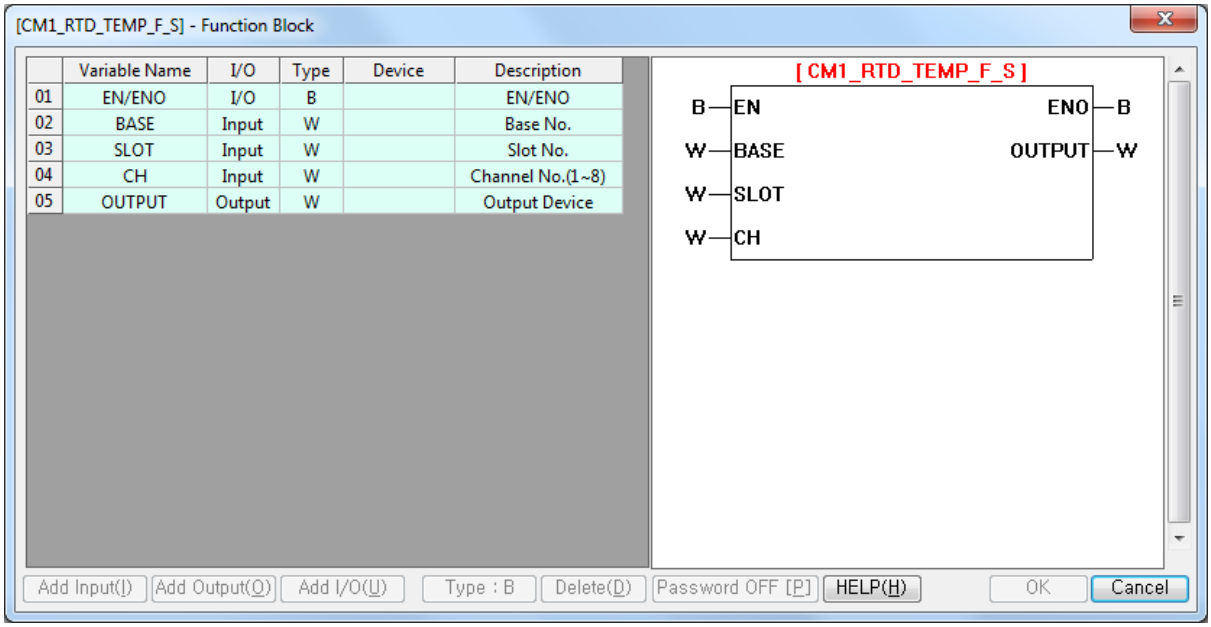
Example) CM3_RTD_TEMP_F_M



You can get temperature values (°F) from Ch1 to Ch3 at the slot #10 and save them to D20, D21, and D22 in sequence. When it works, M19 will be turned ON.

1.3.2.4. RTD_TEMP_F_S

It has only one detected temperature value (°F) from RTD module. It is used to get only one detected temperature value if the FB name is finished with "_S".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16 (There is no Base number for CM2 and CM3)
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
OUTPUT	Output	Word	Write Word type device address that you want to save the converted value (Except :X / F / TS / TC / CS / CC / S)

- If you write wrong SLOT number or BASE number, CPU will have an error.

• System Library type

CM1_RTD_TEMP_F_S / CM2_RTD_ TEMP_ F_S / CM3_RTD_ TEMP_ F_S

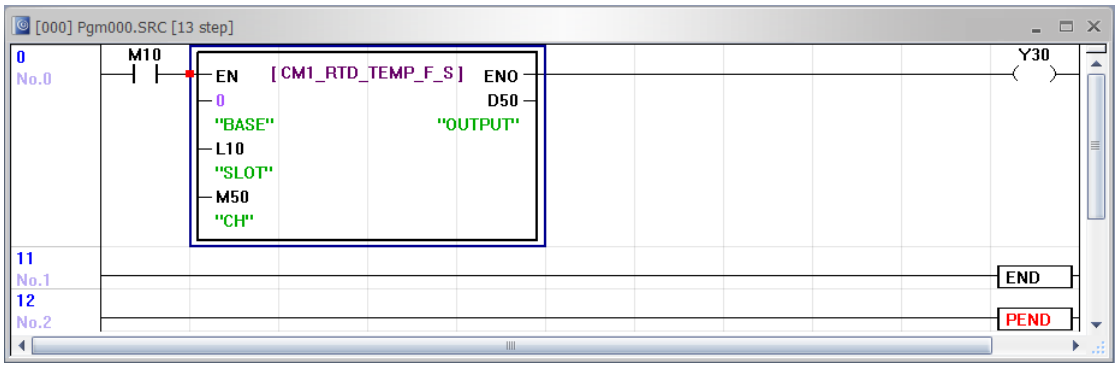
• Buffer Memory Index

CM1 RTD : 11 ~ 18 (Ch.1~8 : Detected temp. (°F) value)

CM2 RTD : 11 ~ 18 (Ch.1~8 : Detected temp. (°F) value)

CM3 RTD : 11 ~ 14 (Ch.1~4 : Detected temp. (°F) value)

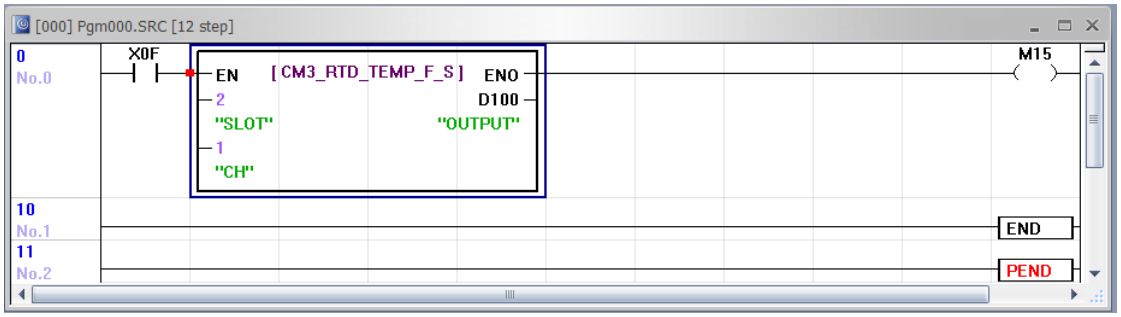
Example) CM1_RTD_TEMP_F_S



BASE (L10)=2, SLOT (M50)=3

You can get a temperature value (°F) from Ch3 at the slot #2 in the local base and save it to D50.

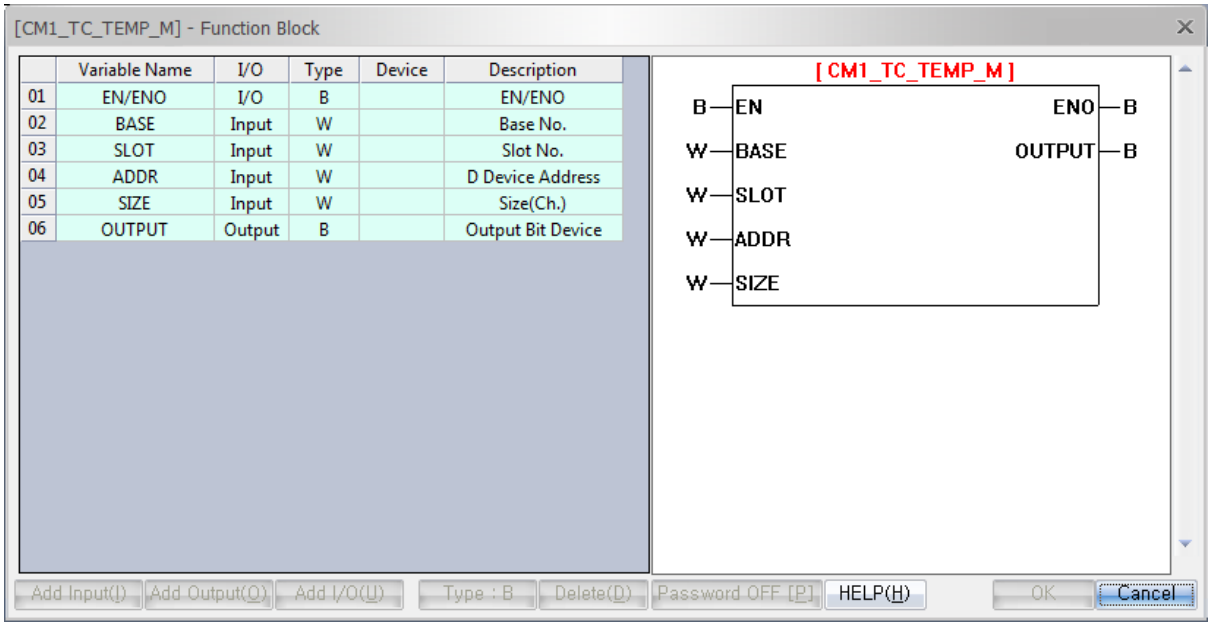
Example) CM3_RTD_TEMP_F_S



You can get a temperature value (°F) from Ch1 at the slot #2 and save it to D100.

1.3.2.5. TC_TEMP_M

It has detected temperature value (°C) from TC module and this digital value will be save in D device. It is used to get more than two digital values if the FB name is finished with "_M".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16 (There is no Base number for CM2 and CM3)
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
OUTPUT	Output	Bit	Not Used

• System Library type

CM1_TC_TEMP_M / CM2_TC_TEMP_M / CM3_TC_TEMP_M

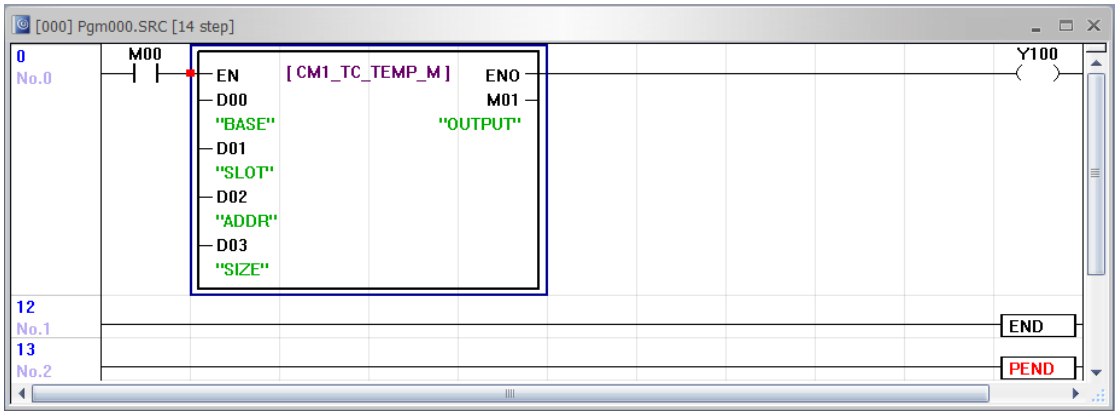
• Buffer Memory Index

CM1 TC : 1 ~ 8 (Ch.1~8 : Detected temperature(°C) value)

CM2 TC : 1 ~ 8 (Ch.1~8 : Detected temperature(°C)value)

CM3 TC : 1 ~ 4 (Ch.1~8 : Detected temperature(°C) value)

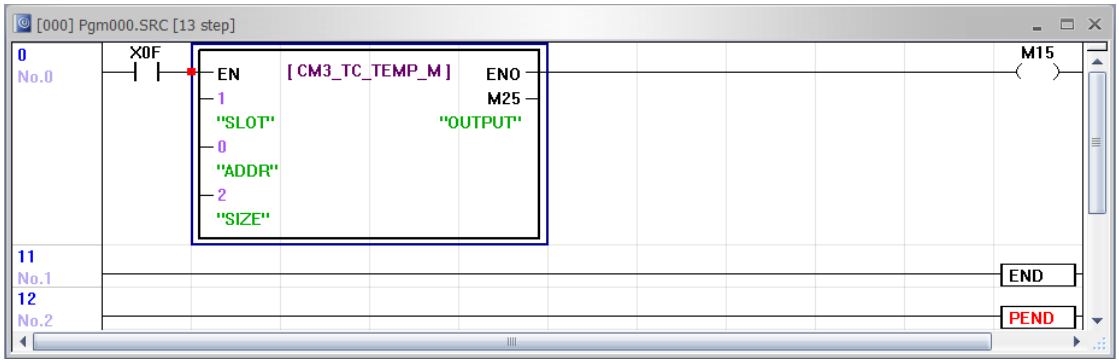
Exmple) CM1_TC_TEMP_M



BASE (D00)=1, SLOT (D01)=2, ADDR (D02)=2000, SIZE(D03)=3

You can get temperature values(°C) from Ch1 to Ch3 at the slot #2 in the 1st expansion base and save them to D2000, D2001, and D2002 in sequence. When it works, M01 will be turned ON.

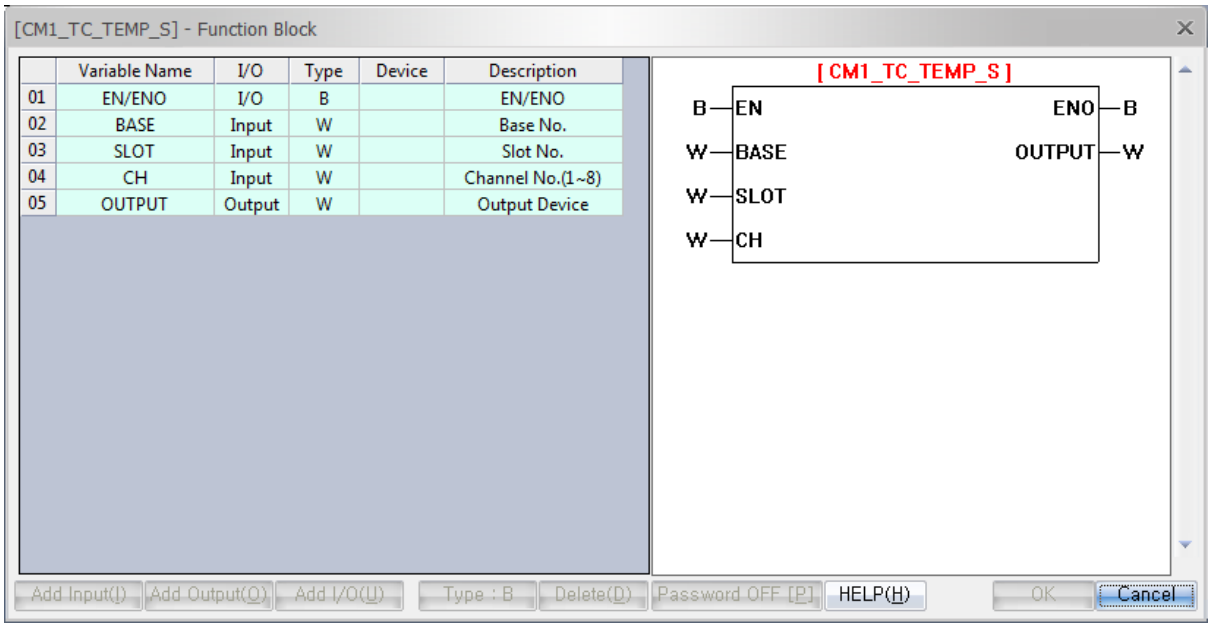
Example) CM3_TC_TEMP_M



You can get temperature values(°C) from Ch1 to Ch2 at the slot #1 and save them to D00 and D01 in sequence. When it works, M25 will be turned ON.

1.3.2.6. TC_TEMP_S

It has only one detected temperature value(°C) from TC module. It is used to get only one detected temperature value if the FB name is finished with "_S".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16 (There is no Base number for CM2 and CM3)
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
OUTPUT	Output	Word	Write Word type device address that you want to save the converted value (Except :X / F / TS / TC / CS / CC / S)

• System Library type

CM1_TC_TEMP_S / CM2_TC_TEMP_S / CM3_TC_TEMP_S

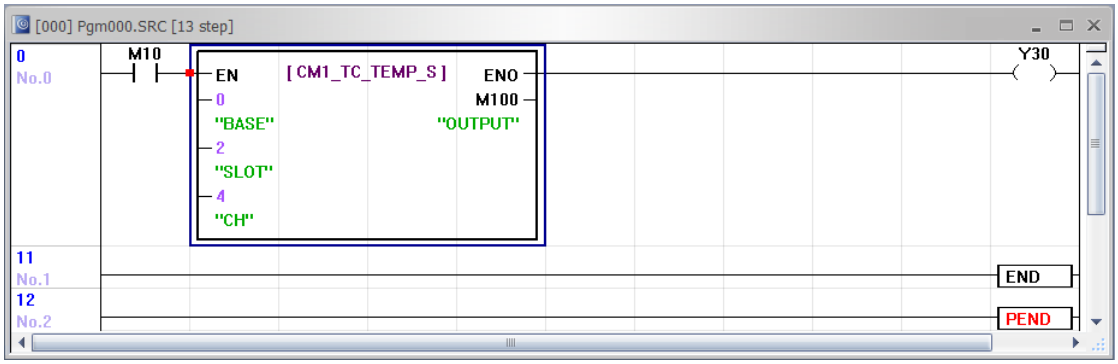
• Buffer Memory Index

CM1 TC : 1 ~ 8 (Ch.1~8 : Detected temperature(°C) value)

CM2 TC : 1 ~ 8 (Ch.1~8 : Detected temperature(°C) value)

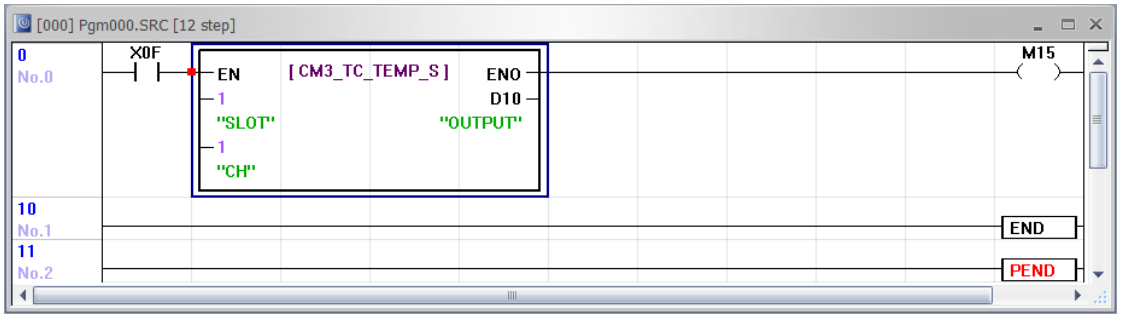
CM3 TC : 1 ~ 4 (Ch.1~4 : Detected temperature(°C) value)

Example) CM1_TC_TEMP_S



You can get a temperature values(°C) from Ch4 at the slot #2 in the local base and save it to M100.

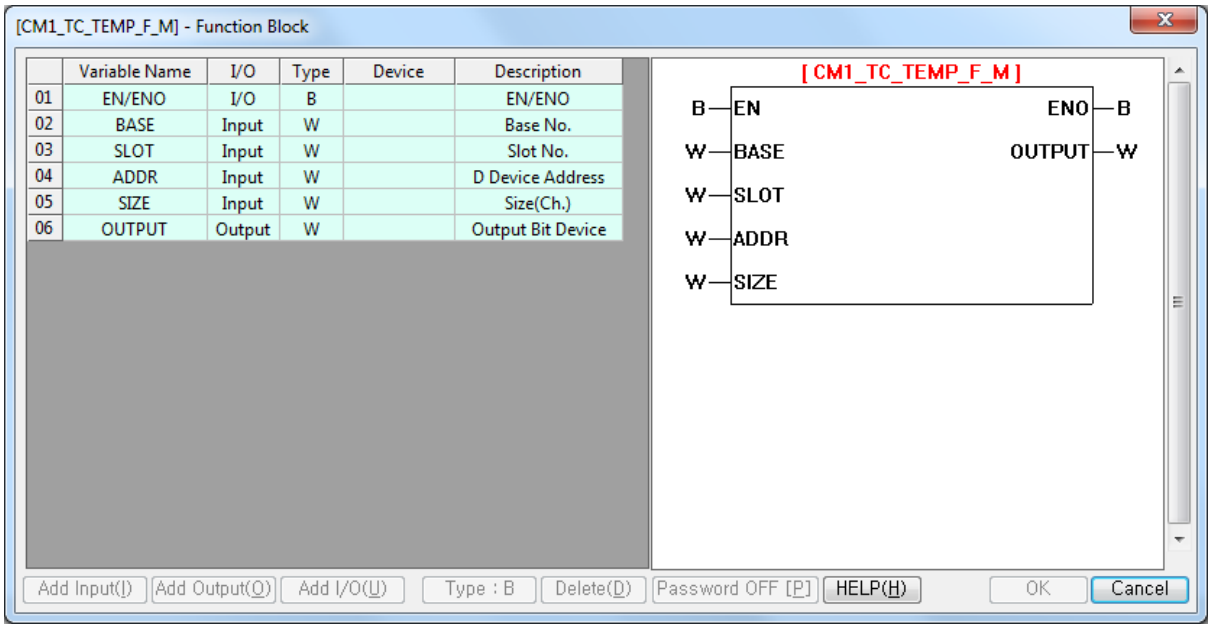
Example) CM3_TC_S



You can get a temperature values(°C) from Ch1 at the slot #1 and save it to D10.

1.3.2.7. TC_TEMP_F_M

It has detected temperature value(°F) from TC module and this digital value will be save in D device. It is used to get more than two digital values if the FB name is finished with "_M".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16 (There is no Base number for CM2 and CM3)
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
OUTPUT	Output	Bit	Not Used

• System Library type

CM1_TC_TEMP_F_M / CM2_TC_TEMP_F_M / CM3_TC_TEMP_F_M

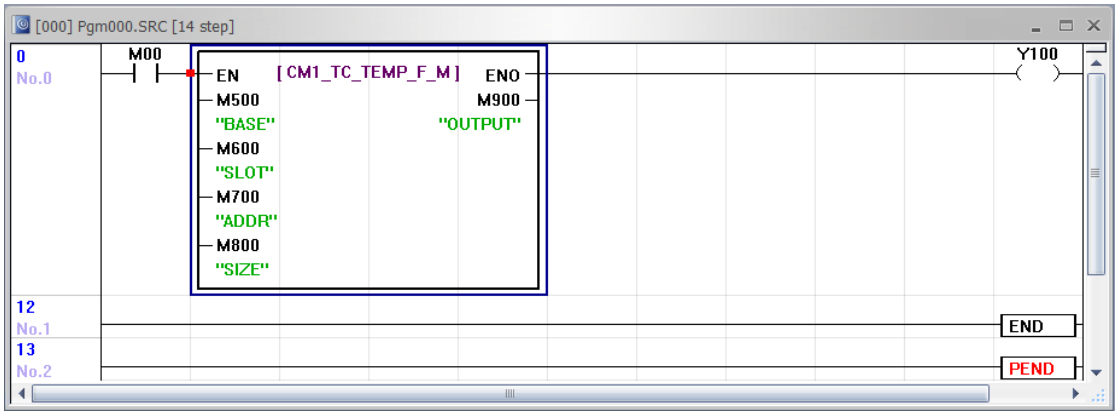
• Buffer Memory Index

CM1 TC : 11 ~ 18 (Ch.1~8 : Detected temperature(°F) value)

CM2 TC : 11 ~ 18 (Ch.1~8 : Detected temperature(°F)value)

CM3 TC : 11 ~ 14 (Ch.1~4 : Detected temperature(°F) value)

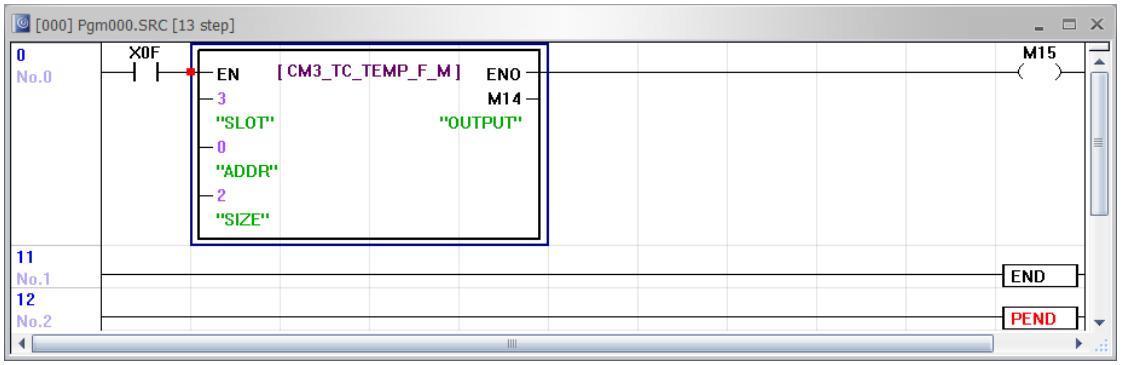
Example) CM1_TC_TEMP_F_M



BASE (M500)=0, SLOT(M600)=8, ADDR(M700)=100, SIZE(M800)=4

You can get temperature values (°F) from Ch1 to Ch4 at the slot #8 in the local base and save them to D100, D101, D102, and D103 in sequence. When it works, M900 will be turned ON.

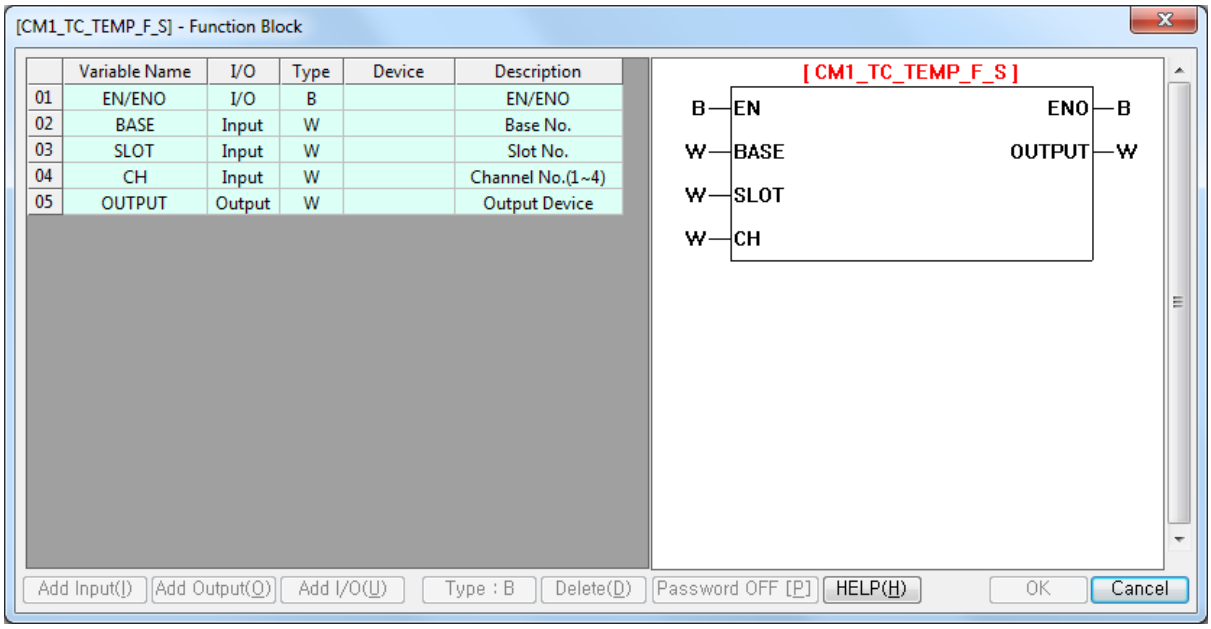
Example) CM3_TC_TEMP_F_M



You can get temperature values (°F) from Ch1 to Ch2 at the slot #3 and save them to D00 and D01 in sequence. When it works, M14 will be turned ON.

1.3.2.8. TC_TEMP_F_S

It has only one detected temperature value(°F) from TC module. It is used to get only one detected temperature value if the FB name is finished with "_S".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16 (There is no Base number for CM2 and CM3)
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
OUTPUT	Output	Word	Write Word type device address that you want to save the converted value (Except :X / F / TS / TC / CS / CC / S)

• System Library type

CM1_TC_TEMP_F_S / CM2_TC_TEMP_F_S / CM3_TC_TEMP_F_S

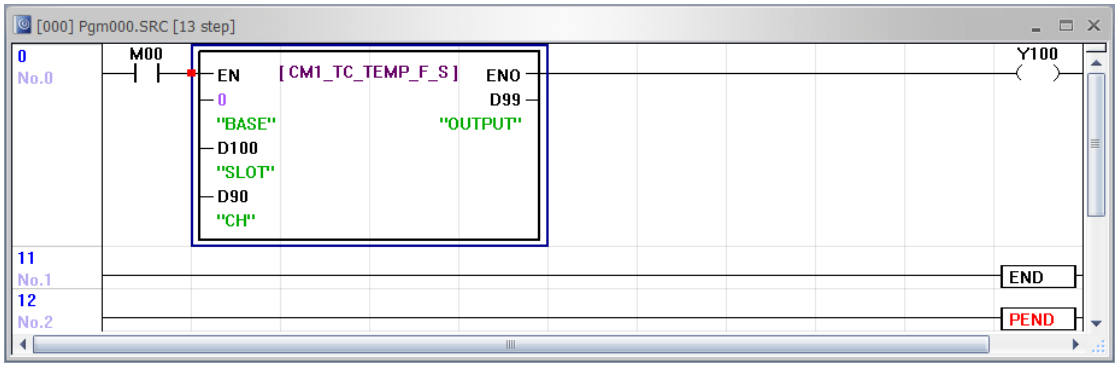
• Buffer Memory Index

CM1 TC : 11 ~ 18 (Ch.1~8 : Detected temperature(°F) value)

CM2 TC : 11 ~ 18 (Ch.1~8 : Detected temperature(°F) value)

CM3 TC : 11 ~ 14 (Ch.1~4 : Detected temperature(°F) value)

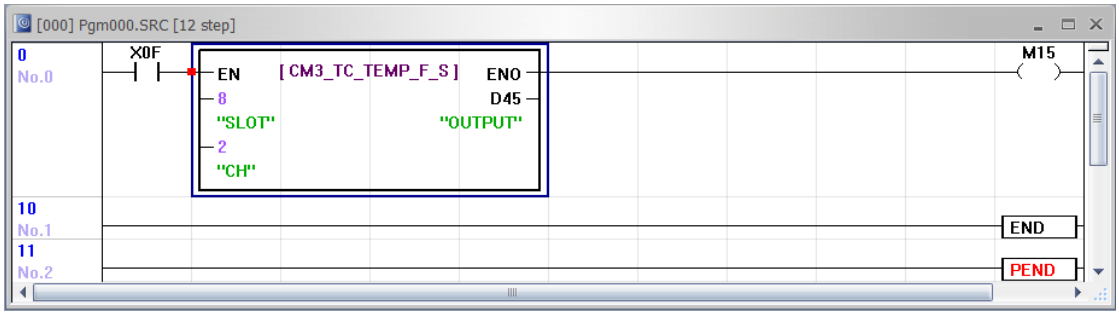
Example) CM1_TC_TEMP_F_S



BASE (D100)=1, SLOT (D90)=2

You can get a temperature value (°F) from Ch2 at the slot #1 in the local base and save it to D99.

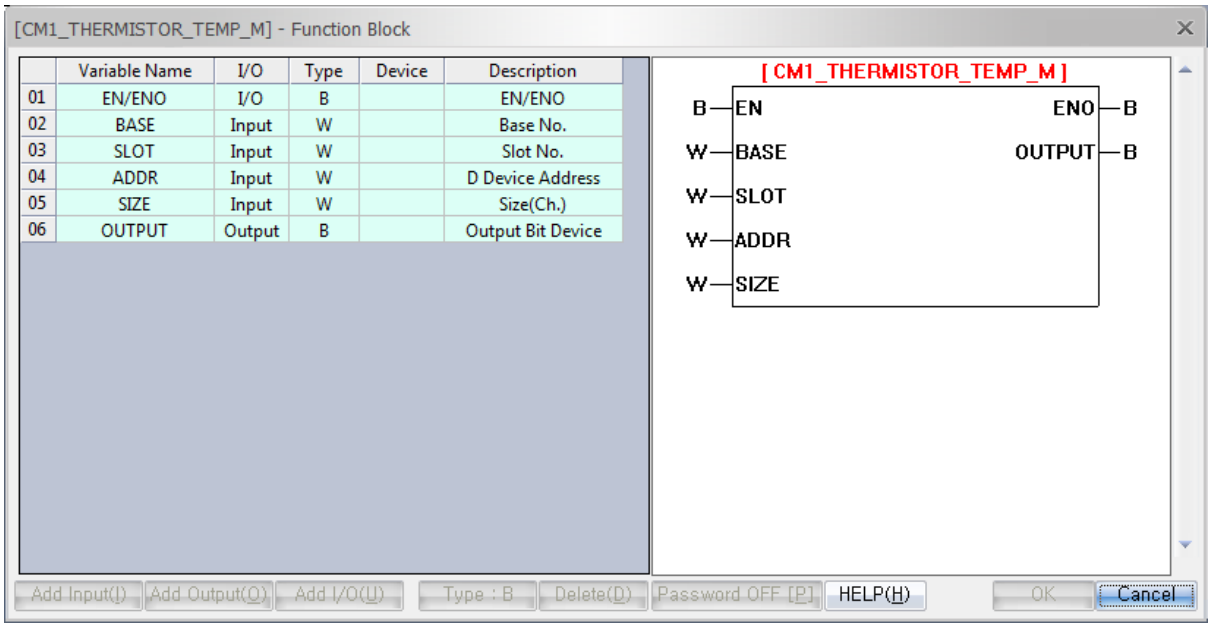
Example) CM3_TC_TEMP_F_S



You can get a temperature value (°F) from Ch2 at the slot #8 and save it to D45.

1.3.2.9. THERMISTOR_TEMP_M

It has detected temperature value (°C) from Thermistor module and this digital value will be save in D device. It is used to get more than two digital values if the FB name is finished with "_M".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
OUTPUT	Output	Bit	Not Used

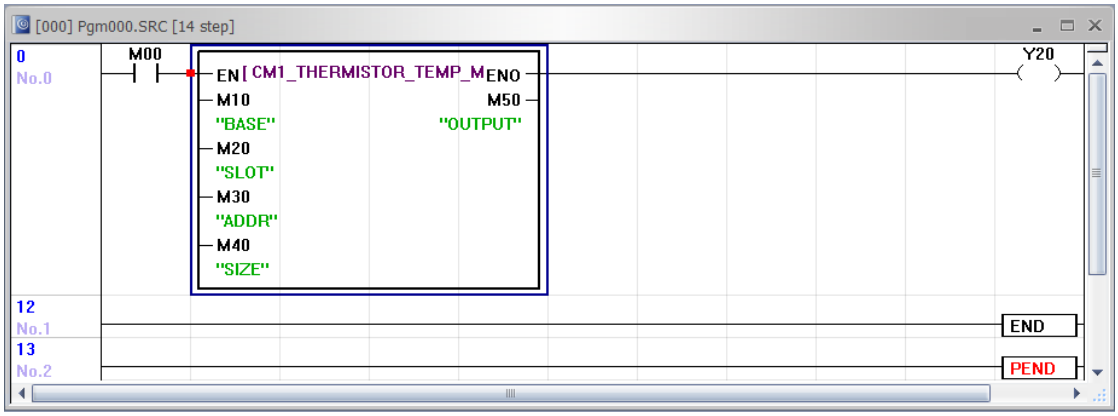
• System Library type

CM1_THERMISTOR_TEMP_M

• Buffer Memory Index

CM1 THERMISTOR : 1 ~ 8 (Ch.1~8 : Detected temperature(°C) value)

Example) CM1_THERMISTOR_TEMP_M

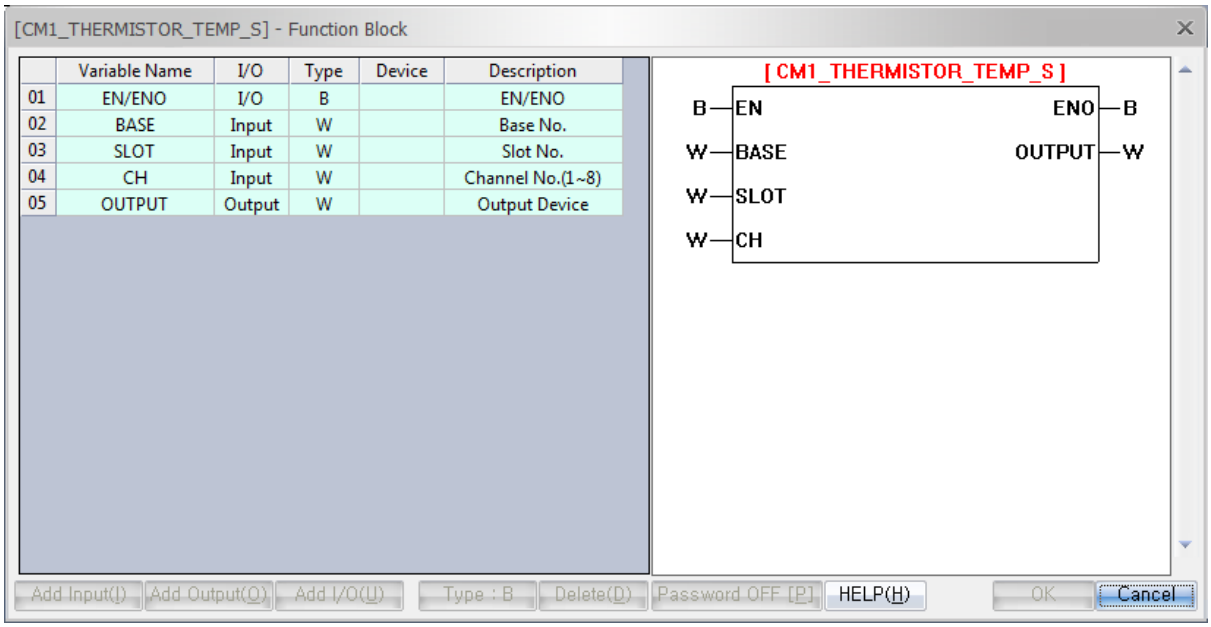


BASE (M10)=0, SLOT (M20)=1, ADDR (M30)=50, SIZE (M40)=2

You can get temperature values (°C) from Ch1 to Ch2 at the slot #1 in the local base and save them to D50 and D51 in sequence. When it works, M50 will be turned ON.

1.3.2.10. THERMISTOR_TEMP_S

It has only one detected temperature value(°C) from Thermistor module. It is used to get only one detected temperature value if the FB name is finished with "_S".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
OUTPUT	Output	Word	Write Word type device address that you want to save the converted value (Except :X / F / TS / TC / CS / CC / S)

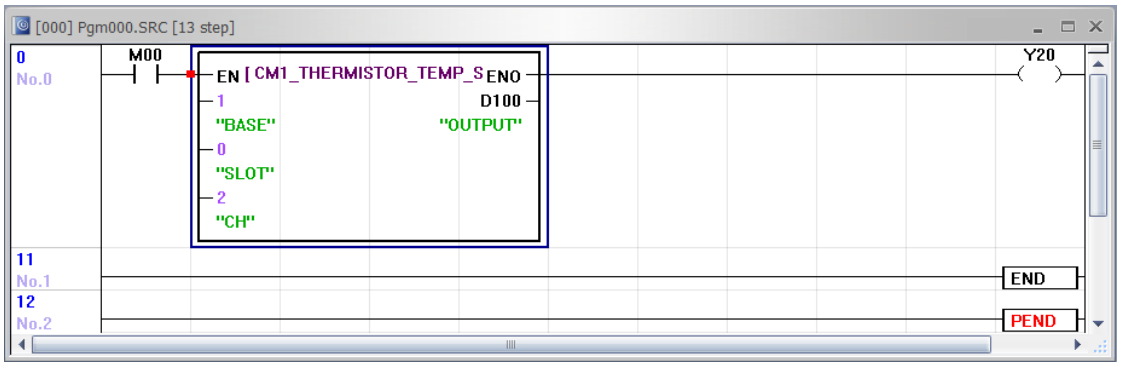
• System Library type

CM1_THERMISTOR_TEMP_S

• Buffer Memory Index

CM1 THERMISTOR : 1 ~ 8 (Ch.1~8 : Detected temperature(°C) value)

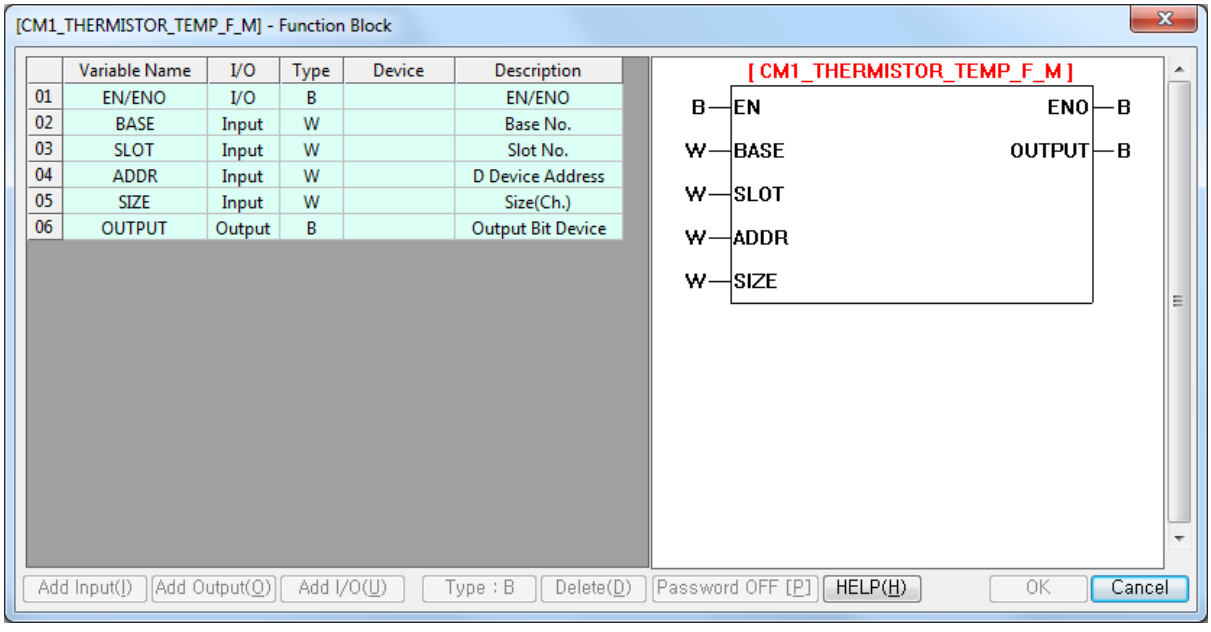
Example) CM1_THERMISTOR_TEMP_S



You can get a temperature value (°C) from Ch2 at the slot #0 in the 1st expansion base and save it to D100.

1.3.2.11. THERMISTOR_TEMP_F_M

It has detected temperature value (°F) from Thermistor module and this digital value will be save in D device. It is used to get more than two digital values if the FB name is finished with "_M".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16

SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
OUTPUT	Output	Bit	Not Used

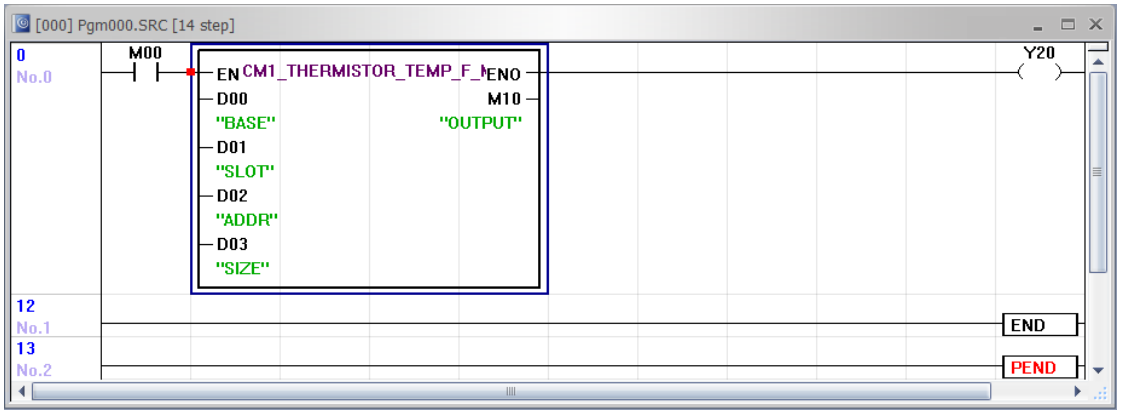
• System Library type

CM1_THERMISTOR_TEMP_M

• Buffer Memory Index

CM1 THERMISTOR : 1 ~ 8 (Ch.1~8 : Detected temperature(°F) value)

Example) CM1_THERMISTOR_TEMP_F_M

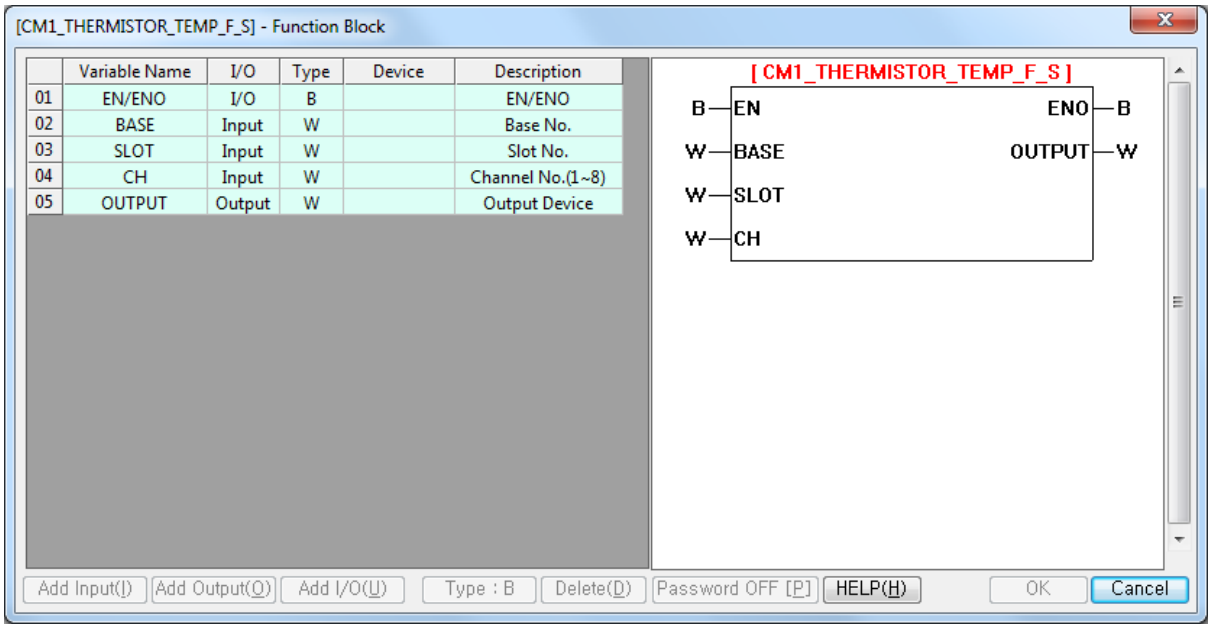


BASE (D00)=0, SLOT (D01)=2, ADDR (D02)=10, SIZE (D03)=1

You can get a temperature value (°F) from Ch1 at the slot #2 in the local base and save it to D10. When it works, M10 will be turned ON.

1.3.2.10. THERMISTOR_TEMP_F_S

It has only one detected temperature value(°F) from Thermistor module. It is used to get only one detected temperature value if the FB name is finished with "_S".



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
OUTPUT	Output	Word	Write Word type device address that you want to save the converted value (Except :X / F / TS / TC / CS / CC / S)

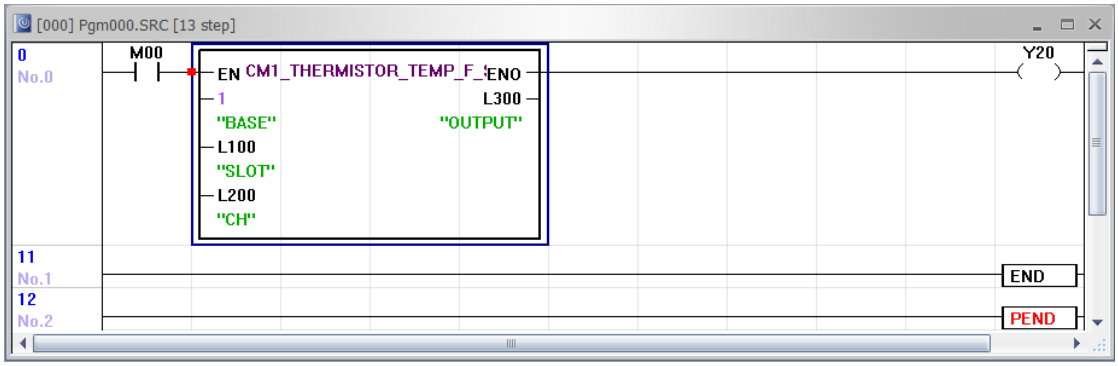
• System Library type

CM1_THERMISTOR_TEMP_F_S

• Buffer Memory Index

CM1 THERMISTOR : 1 ~ 8 (Ch.1~8 : Detected temperature(°F) value)

Example) CM1_THEMISTOR_TEMP_F_S



BASE (L100)=3, SLOT (L200)=4

You can get a temperature value (°F) from Ch4 at the slot #3 in the 1st expansion base and save it to L300.

1.3.3. GET : Error Code

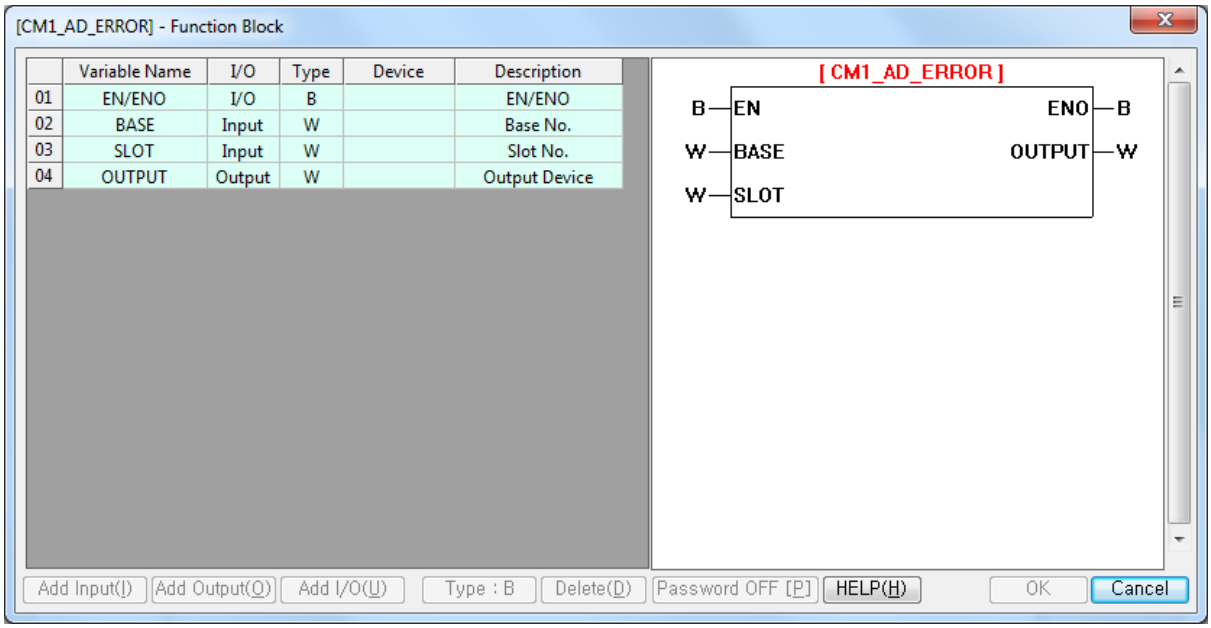
It is used to get an error code from Special module. RTD, TC and Thermistor Error Library can have more than 2 buffer memory.

- **GET : ERROR Library List**

Group	CPU	Library name	Buffer Memory	Description
GET ERROR	CM1	CM1_AD_ERROR	19	AD Error code
		CM1_AD16_ERROR	62	AD 16Ch. Error code
		CM1_DA_ERROR	9	DA Error code
		CM1_RTD_ERROR	31~38	RTD Error code
		CM1_RTD_MAX_MIN_ERROR	50	RTD Max./Min. setting Error (Buffer memory 49 must be set)
		CM1_TC_ERROR	31~34	TC Error code
		CM1_TC_MAX_MIN_ERROR	50	TC Max./Min. setting Error (Buffer memory 49 must be set)
		CM1_THERMISTOR_ERROR	31~38	THERMISTOR Error code
	CM2	CM2_AD_ERROR	19	AD Error code
		CM2_DA_ERROR	9	DA Error code
		CM2_ADDA_AD_ERROR	11	ADDA AD Error code
		CM2_ADDA_DA_ERROR	37	ADDA DA Error code
		CM2_RTD_ERROR	31~38	RTD Error code
		CM2_RTD_MAX_MIN_ERROR	50	RTD Max./Min. setting Error (Buffer memory 49 must be set)
		CM2_TC_ERROR	31~38	TC Error code
		CM2_TC_MAX_MIN_ERROR	50	TC Max./Min. setting Error (Buffer memory 49 must be set)
	CM3	CM3_AD_ERROR	37	AD Error code
		CM3_DA_ERROR	21	DA Error code
		CM3_ADDA_ERROR	29	ADDA Error code
		CM3_RTD_ERROR	31~38	RTD Error code
		CM3_RTD_MAX_MIN_ERROR	50	RTD Max./Min. setting Error (Buffer memory 49 must be set)
		CM3_TC_ERROR	31~38	TC Error code
		CM3_TC_MAX_MIN_ERROR	50	TC Max./Min. setting Error (Buffer memory 49 must be set)
		CM3_AD_MUX_ERROR	15	AD MUX Error code

1.3.3.1. ERROR– Special modules

This FB is used to have error code from a module. If error code is “0”, it is normal condition.



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16 (There is no Base number for CM2 and CM3)
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
OUTPUT	Output	Word	Write device address that you want to save the Error code

• System Library type

CM1_AD_ERROR, CM1_AD16_ERROR, CM1_DA_ERROR,

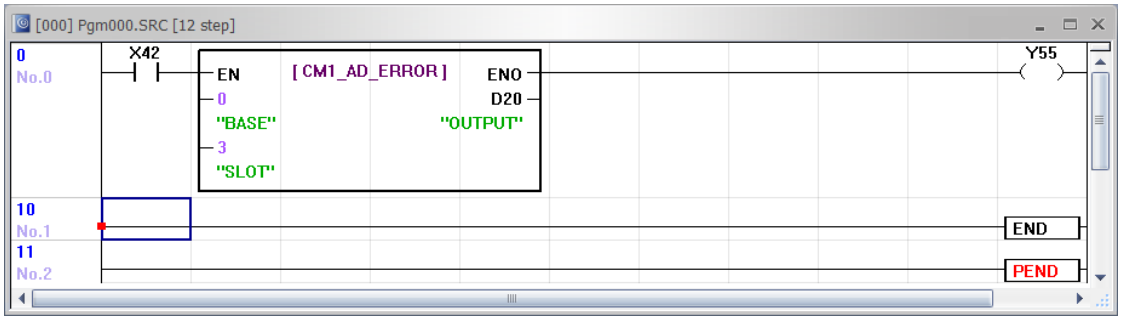
CM1_RTD_MAX_MIN_ERROR, CM1_TC_MAX_MIN_ERROR,

CM2_AD_ERROR, CM2_DA_ERROR, CM2_ADDA_AD_ERROR,
CM2_ADDA_DA_ERROR, CM2_RTD_MAX_MIN_ERROR, CM2_TC_MAX_MIN_ERROR

CM3_AD_ERROR, CM3_DA_ERROR, CM3_ADDA_ERROR,

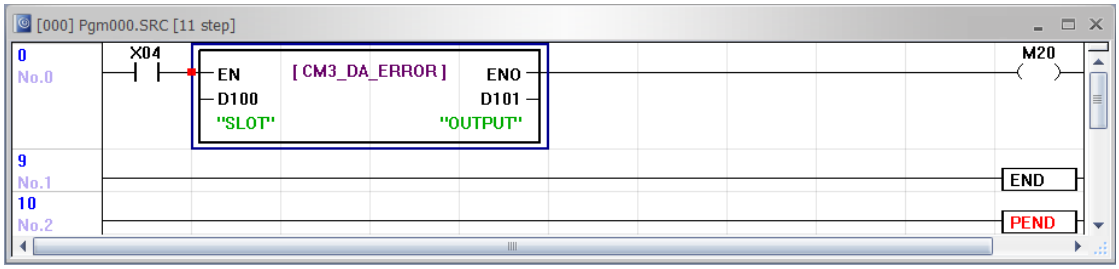
CM3_RTD_MAX_MIN_ERROR, CM3_TC_MAX_MIN_ERROR, CM3_AD_MUX_ERROR

Example) CM1_AD_ERROR



You can get error code from Slot No.3 module in Local Base and save it to D20.

Example) CM3_DA_ERROR

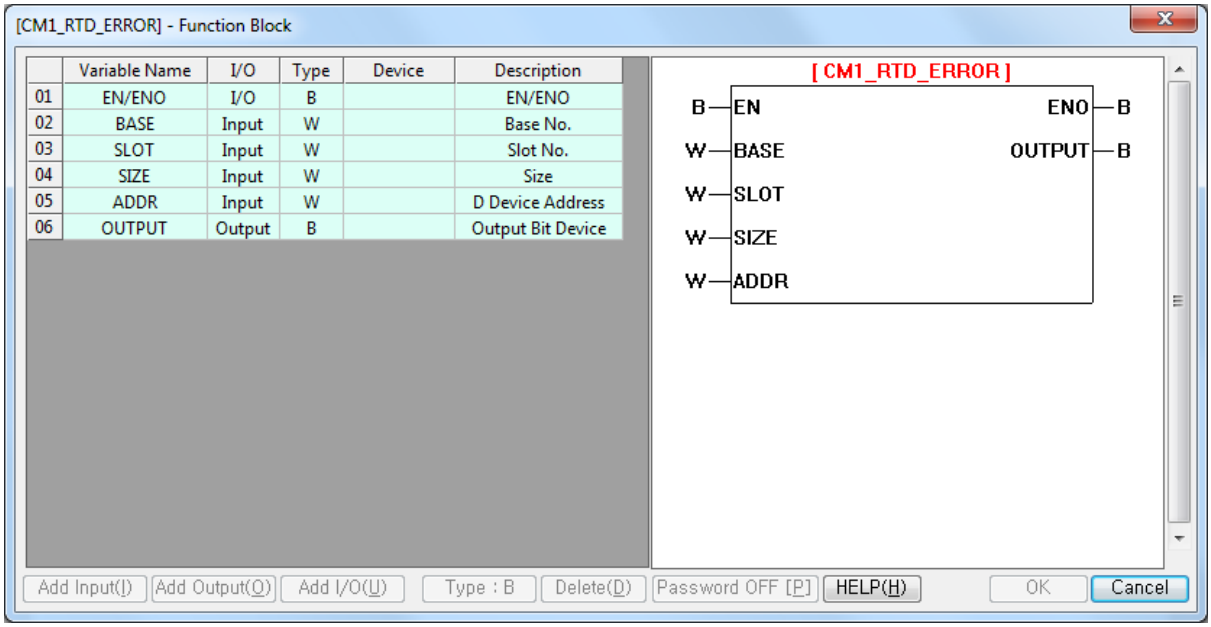


You can get error code from D100 and save it to D101.

If D100 is 6, it can get error code from the slot number 6 and save its error code to D101.

1.3.3.2. ERROR– RDT, TC and Thermistor modules

This FB is used to get more than 1 error code from a module. If error code is “0”, it is normal condition.


[CM1_RTD_ERROR] - Function Block
Variable Name | I/O | Type | Device | Description
01 | EN/ENO | I/O | B | EN/ENO
02 | BASE | Input | W | Base No.
03 | SLOT | Input | W | Slot No.
04 | SIZE | Input | W | Size
05 | ADDR | Input | W | D Device Address
06 | OUTPUT | Output | B | Output Bit Device
[CM1_RTD_ERROR]
B EN
W BASE
W SLOT
W SIZE
W ADDR
ENO B
OUTPUT B
Add Input(I)
Add Output(O)
Add I/O(U)
Type : B
Delete(D)
Password OFF [P]
HELP(H)
OK
Cancel

Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16 (There is no Base number for CM2 and CM3)
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
OUTPUT	Output	Bit	Bit will be turned ON if it works.

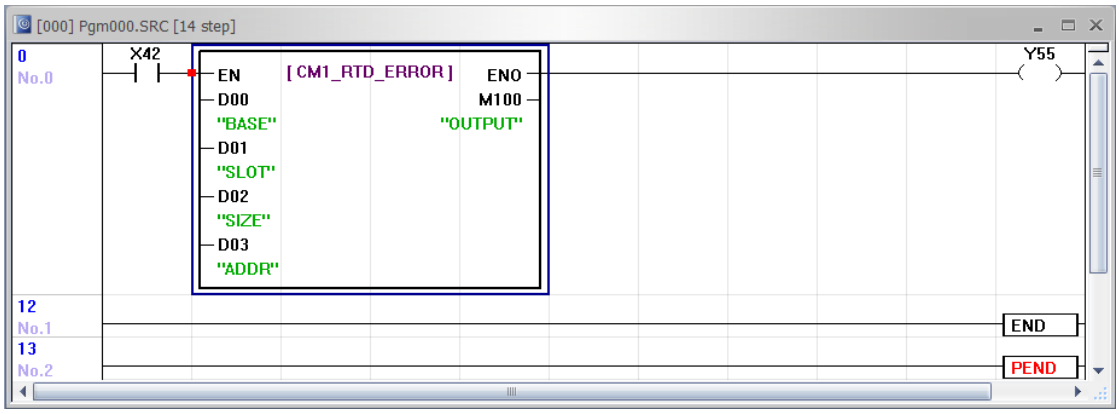
• System Library type

CM1_RTD_ERROR / CM1_TC_ERROR

CM2_RTD_ERROR / CM2_TC_ERROR

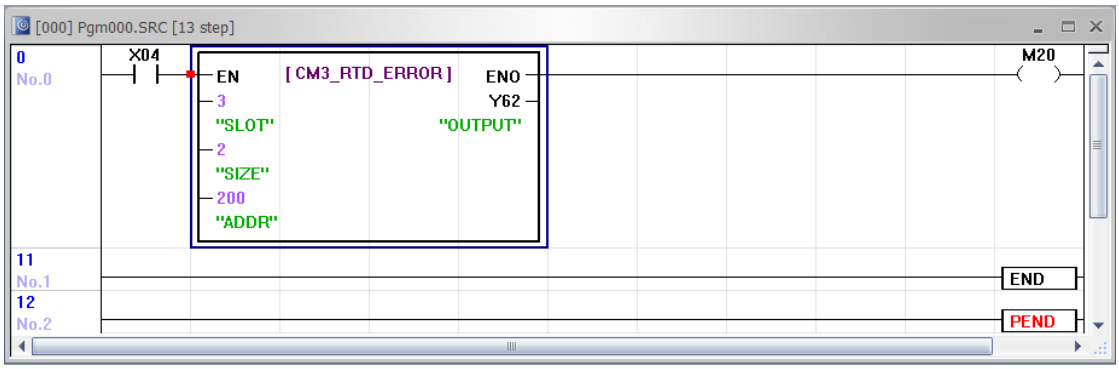
CM3_RTD_ERROR / CM3_TC_ERROR

Example) CM1_RTD_ERROR



In case of D00: 1(1st expansion Base), D01: 2(Slot number2), D02: 2(Ch1 and Ch2), D03: 100, you can have two error codes from Channel 1 and 2 at Slot number 2 in 1st Expansion Base and save them to D100 and D101 each. If it works properly, M100 bit will be turned ON. (Slot number starts from 0)

Example) CM3_RTD_ERROR



You can get two error codes from Slot number3 and save them to D200 and D201 each. If it works properly, Y62 will be turned ON.

1.3.4. PUT (Digital output value)

It is used to write a value to special module.

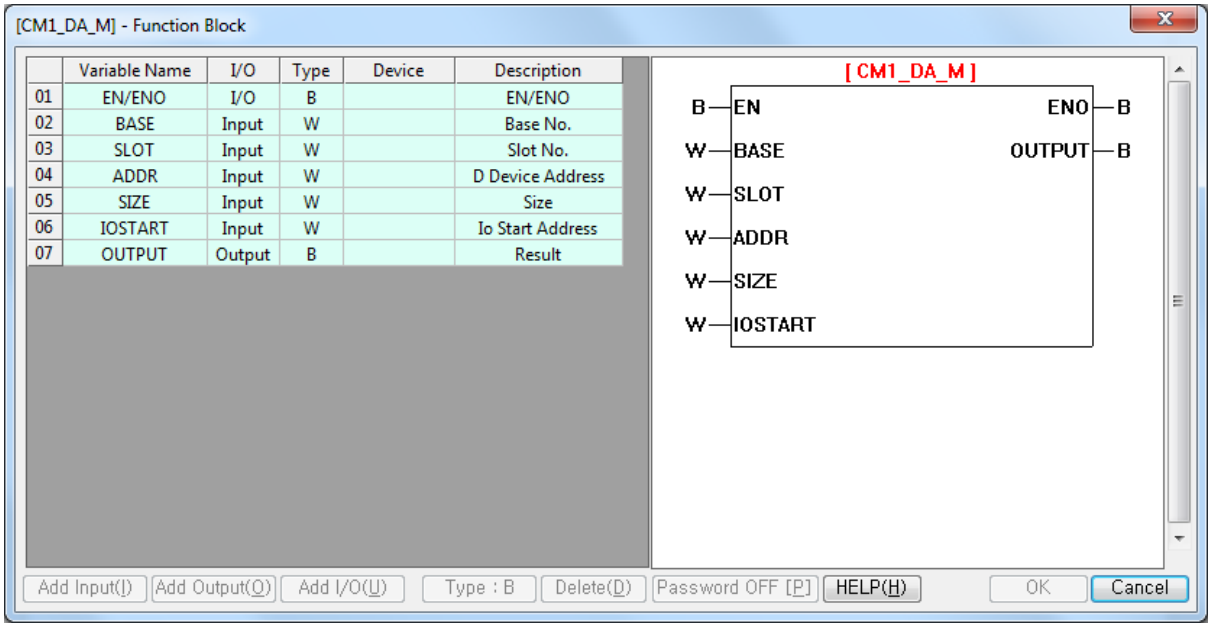
• PUT (Digital output value) Library List

Group	CPU	Library name	Buffer Memory	Description
PUT Digital Output value	CM1	CM1_DA_M	1~8	CM1 DA Digital value (More than 1)
		CM1_DA_S	1~8	CM1 DA Digital value
	CM2	CM2_DA_M	1~8	CM2 DA Digital value (More than 1)
		CM2_DA_S	1~8	CM2 DA Digital value
		CM2_ADDA_DA_M	33~34	CM2 ADDA DA Digital value(More than 1)
		CM2_ADDA_DA_S	33~34	CM2 ADDA DA Digital value
	CM3	CM3_DA_M	1~4	CM3 DA Digital value (More than 1)
		CM3_DA_S	1~4	CM3 DA Digital value
		CM3_ADDA_DA_M	26~27	CM3 ADDA DA Digital value(More than 1)
		CM3_ADDA_DA_S	26~27	CM3 ADDA DA Digital value

1.3.4.1. DA_M (DA module : Write Digital value) – TO Instruction

It sets digital value to DA module and this digital value will be save in D device. It is used to set more than two digital values if the FB name is finished with "_M".

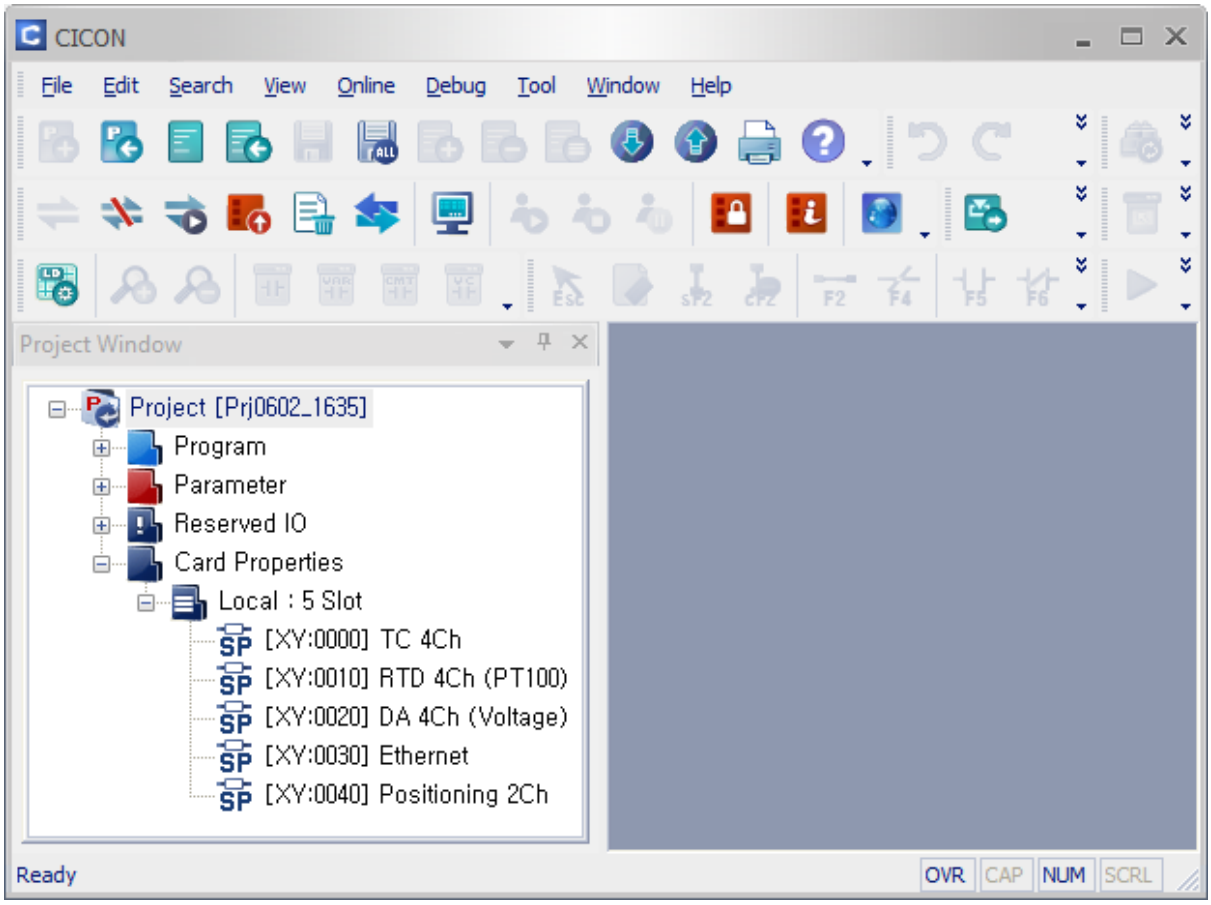
• You need to make a channel enable or disable that you want to use in Special Module Setup or in scan program.



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16 (There is no Base number for CM2 and CM3)
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
SIZE	Input	Word	Write number of Channel (Ex. Ch.1→Write 1, Ch.1~3→Write 3)
IOSTART	Input	Word	Write starting IO address of DA module. (Ex. X20/Y20 at Slot number2, Write 2)
OUTPUT	Output	Bit	Bit will be turned ON if it works.

- If you write wrong SLOT number or BASE number, CPU will have an error.
- In order to save the value to buffer memory, the Flag of the assigned device address must be turned ON. If the flag is not turned ON, value is removed after Power turned OFF.

Notice : IOSTART address is different with Slot number. Each module has an assigned IO address. For example, 16points Digital IO module has 16 IO address(X0~XF or Y0~YF) and 32points Digital IO module has 32 IO address(X0~X1F or Y0~Y1F).



In this case, DA module is installed Slot number 2 and the assigned IO starts from 20. Therefore, you need to write 2 at the IOSTART variable.

• System Library type

CM1_DA_M / CM2_DA_M / CM2_ADDA_DA_M / CM3_DA_M / CM3_ADDA_M

• Buffer Memory Index

CM1_DA : 1 ~ 8 (Ch.1~8 : Digital value)

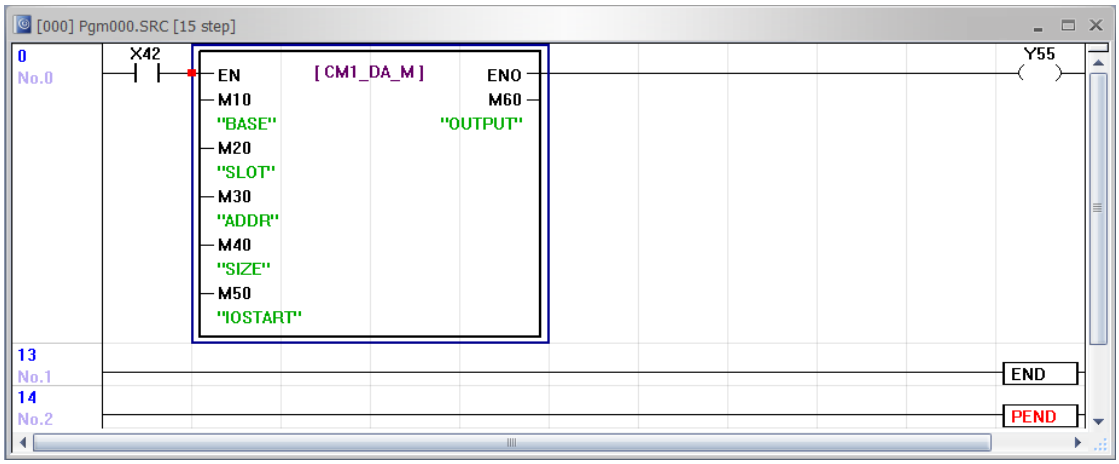
CM2_DA : 1 ~ 8 (Ch.1~8 : Digital value)

CM2_ADDA_DA : 33 ~ 34 (Ch.1~2 : Digital value)

CM3_DA : 1 ~ 4 (Ch.1~4 : Digital Output value)

CM3_ADDA_DA : 26 ~ 37 (Ch.1~2 : Digital Output value)

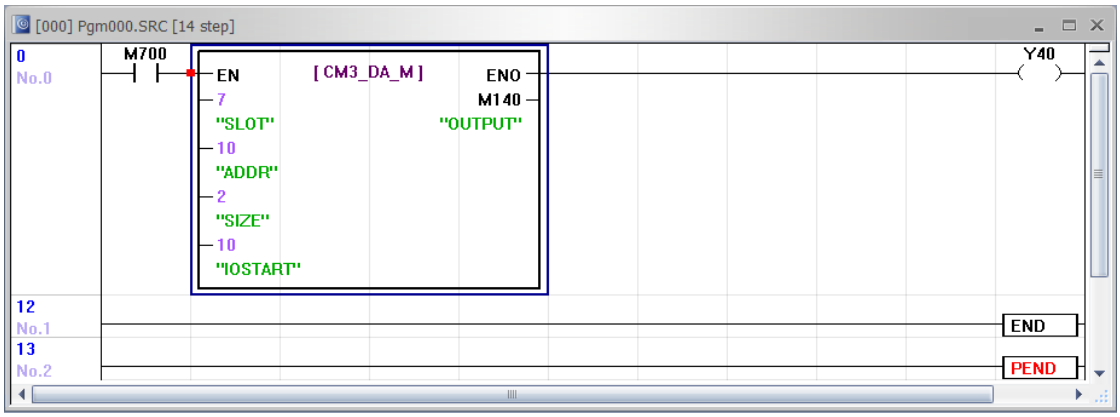
Example) : CM1_DA_M



BASE (M10)=0, SLOT (M20)=3, ADDR (M30)=150, SIZE (M40)=3, IOSTART (M50)=5

You can write digital output value D150, D151 and D152 to Ch1, Ch2 and Ch3 of slot#3 module in the local base in sequence. When it works, M60 will be turned ON. (5 is a XY starting address of module in slot#3)

Example) CM3_DA_M

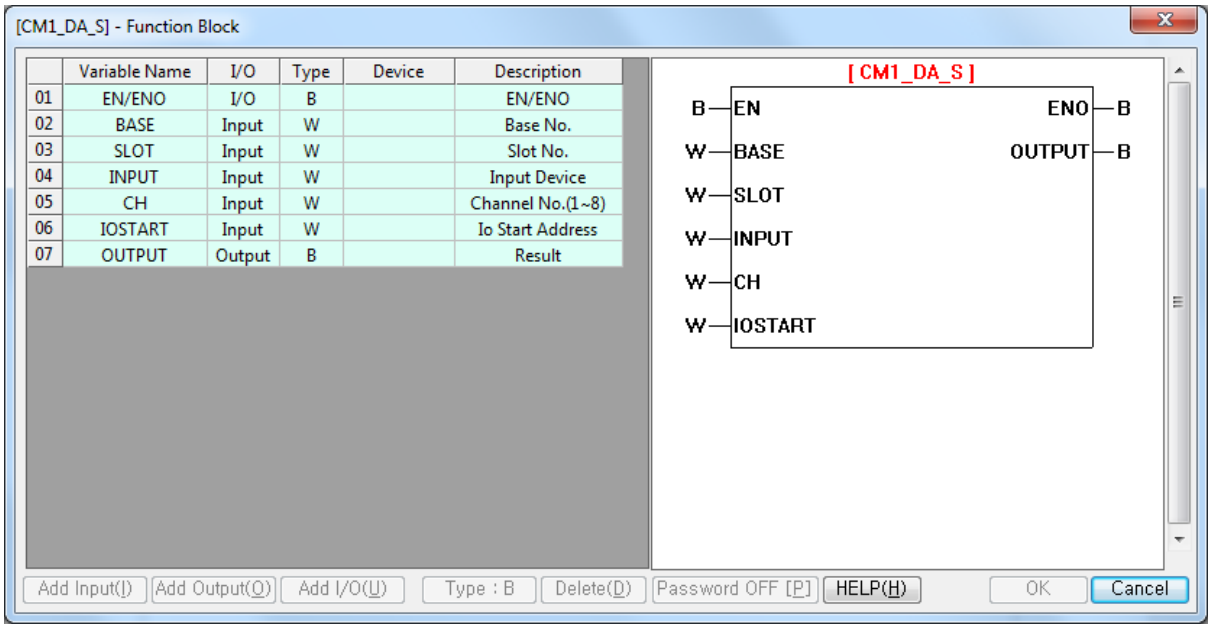


You can write digital output values D10 and D11 to Ch1 and Ch2 of slot#7 in sequence. When it works, M140 will be turned ON. (10 is a XY starting address of module in slot#7)

1.3.4.2. DA_S (DA module : Write Digital value) – TO Instruction

It sets digital value to DA module. The device address of INPUT will be set to assigned channel of CH variable. It is used to get only one value if the FB name is finished with "_S".

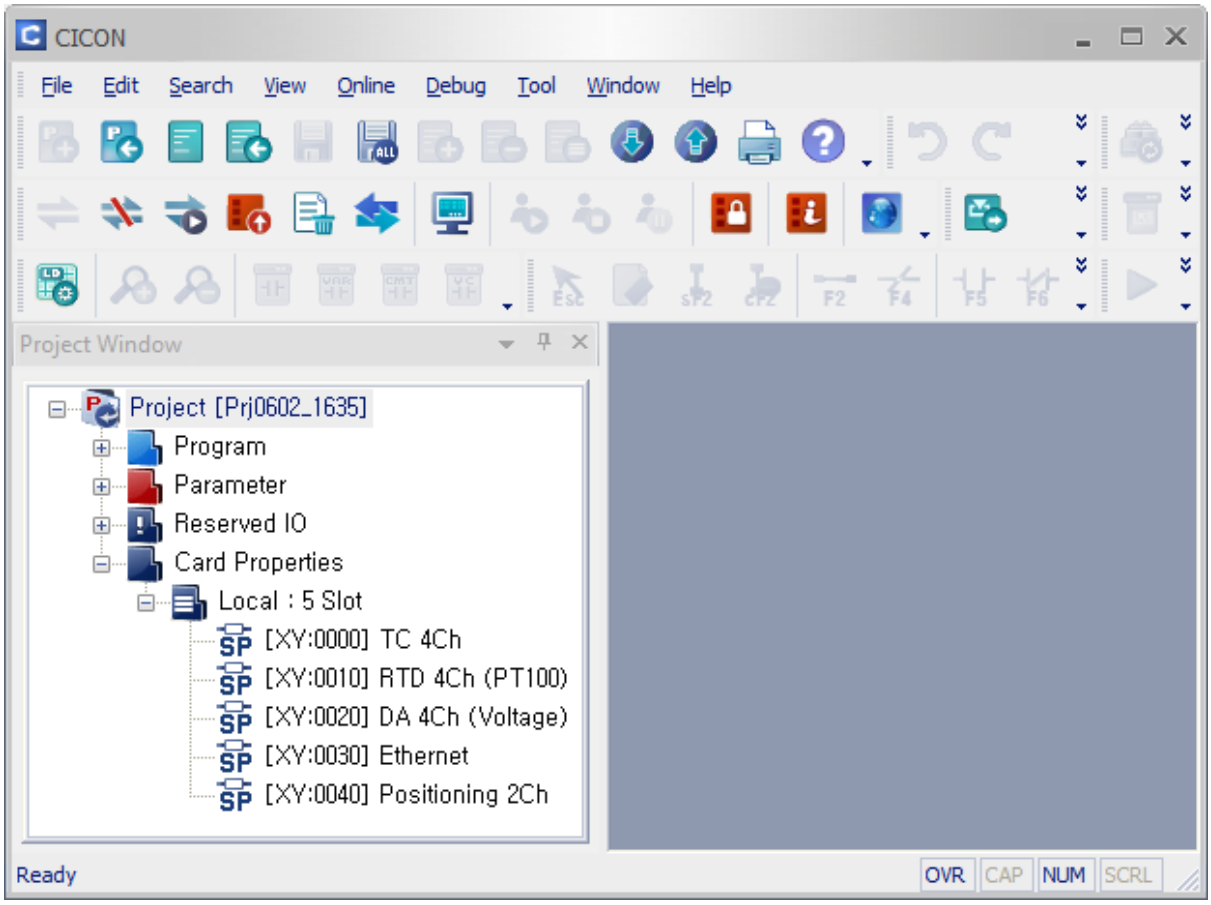
• You need to make a channel enable or disable that you want to use in Special Module Setup or in scan program.



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16 (There is no Base number for CM2 and CM3)
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
INPUT	Input	Word	Write Word type device address that you want to save the converted value (Except :X / F / TS / TC / CS / CC / S)
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
IOSTART	Input	Word	Write starting IO address of DA module. (Ex. X20/Y20 at Slot number2, Write 2)
OUTPUT	Output	Bit	Bit will be turned ON if it works.

- If you write wrong SLOT number or BASE number, CPU will have an error.
- In order to save the value to buffer memory, the Flag of the assigned device address must be turned ON. If the flag is not turned ON, value is removed after Power turned OFF.

Notice : IOSTART address is different with Slot number. Each module has an assigned IO address. For example, 16points Digital IO module has 16 IO address(X0~XF or Y0~YF) and 32points Digital IO module has 32 IO address(X0~X1F or Y0~Y1F).



In this case, DA module is installed Slot number 2 and the assigned IO starts from 20. Therefore, you need to write 2 at the IOSTART variable.

• System Library type

CM1_DA_S / CM2_DA_S / CM2_ADDA_DA_S / CM3_DA_S / CM3_ADDA_S

• Buffer Memory Index

CM1_DA : 1 ~ 8 (Ch.1~8 : Digital value)

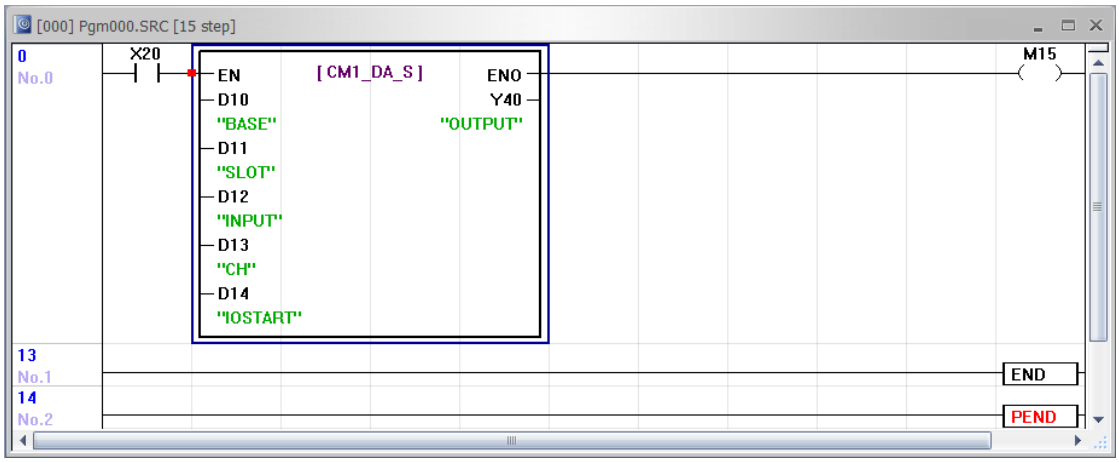
CM2_DA : 1 ~ 8 (Ch.1~8 : Digital value)

CM2_ADDA_DA : 33 ~ 34 (Ch.1~2 : Digital value)

CM3_DA : 1 ~ 4 (Ch.1~4 : Digital Output value)

CM3_ADDA_DA : 26 ~ 37 (Ch.1~2 : Digital Output value)

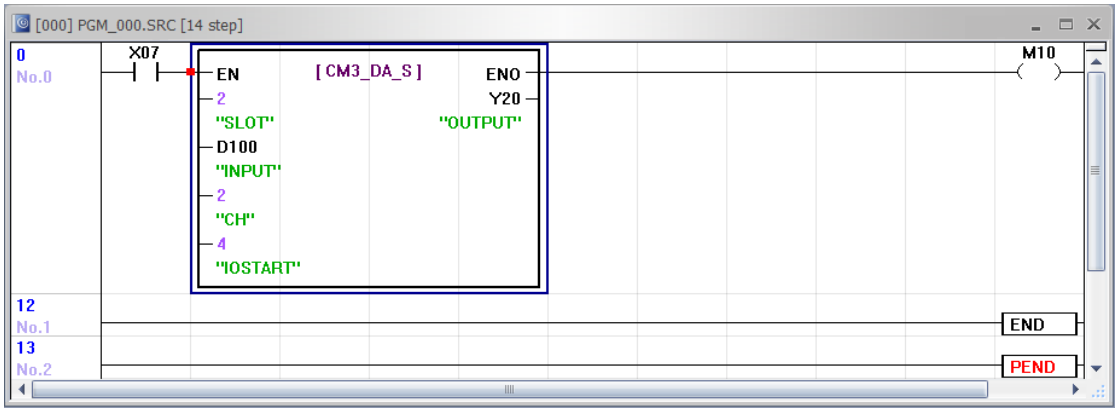
Example) CM1_DA_S



BASE (D10)=0, SLOT (D11)=5, INPUT (D12)=5000, Channel (D13)=4, IOSTART (D14)=6

You can write digital output value 5000 to Ch4 of slot#5 module in local base. When it works, Y40 will be turned ON. (6 is a XY starting address of module in slot#5)

Example) CM3_DA_S



You can write digital output values D100 to Ch2 of slot#2 module. When it works, Y20 will be turned ON. (4 is a XY starting address of module in slot#2)

1.3.5. PUT : ETC

It is used to write a value to special module.

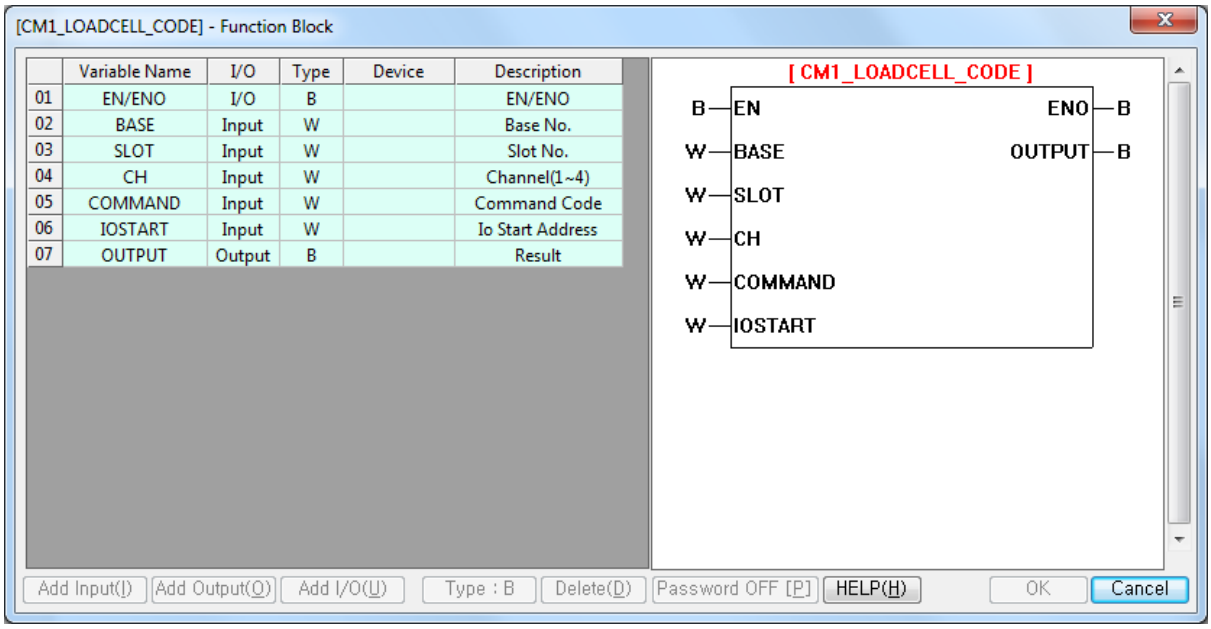
- **PUT (Digital output value) Library List**

Group	CPU	Library name	Buffer Memory	Description
PUT ETC	CM1	CM1_LOADCELL_CODE	7/22/37/52	CM1 LOADCELL Command Main Code
	CM3	CM3_AD_MUX_ENABLE	0	CM3 AD MUX Channel Enable/Disable set

1.3.5.1. LOADCELL_CODE

It sets Command main code to Loadcell module. Only one Command main code can be set up for a channel in Function Block.

• You need to make a channel enable or disable that you want to use in Special Module Setup or in scan program.

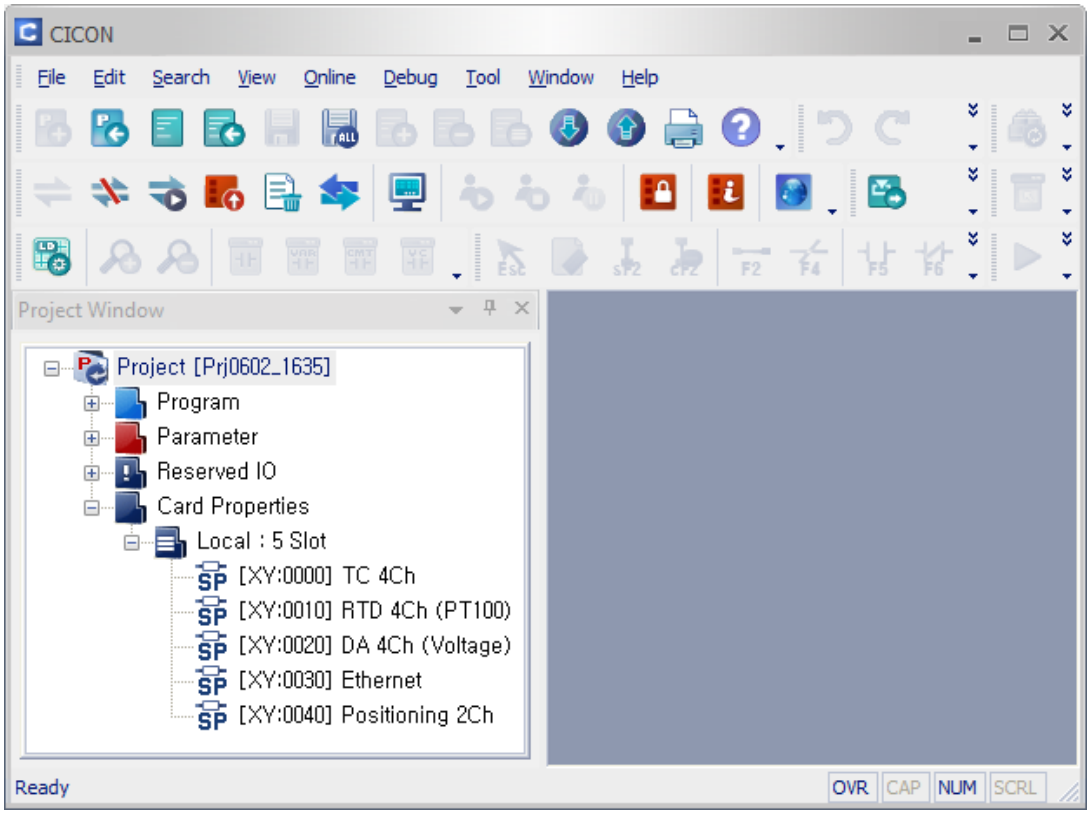


Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16 (There is no Base number for CM2 and CM3)
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
COMMAND	Input	Word	Write Command main code (Ex. Error Clear, Write 1)
IOSTART	Input	Word	Write starting IO address of DA module. (Ex. X20/Y20 at Slot number2, Write 2)
OUTPUT	Output	Bit	Bit will be turned ON if it works.

- If you write wrong SLOT number or BASE number, CPU will have an error.
- In order to save the value to buffer memory, the Flag of the assigned device address must be turned ON. If the flag is not turned ON, value is removed after Power turned OFF.
- Command main code

Code	Name	Description
0000H(0)	None	None
0001H(1)	Error Clear	Clear error code. Error code will become '0' and channel error (Buffer XA~XD) will be turned OFF.
0002H(2)	Run Batch	Run Batch program. The Batch program must be assigned at the Weighting mode.
0003H(3)	Stop Batch	Stop running Batch program.
0004H(4)	Calibration	Calibrate current measured weight to zero.
0005H(5)	Set Command sub code	Assign current measured weight to Command sub code low/high. It must be done after calibration
0006H(6)	Save calibration	Save calibrated data to memory. The saved parameter will be applied automatically when Power is ON.
0007H(7)	Zero Clear	Make Zero applied weight(Gross weight) Zero point
0008H(8)	Tare Clear	Make Tare applied weight(Net weight) Zero point
0009H(9)	Change set value	Change current operating parameter and Batch parameter value to buffer memory value.

Notice : IOSTART address is different with Slot number. Each module has an assigned IO address. For example, 16points Digital IO module has 16 IO address(X0~XF or Y0~YF) and 32points Digital IO module has 32 IO address(X0~X1F or Y0~Y1F).

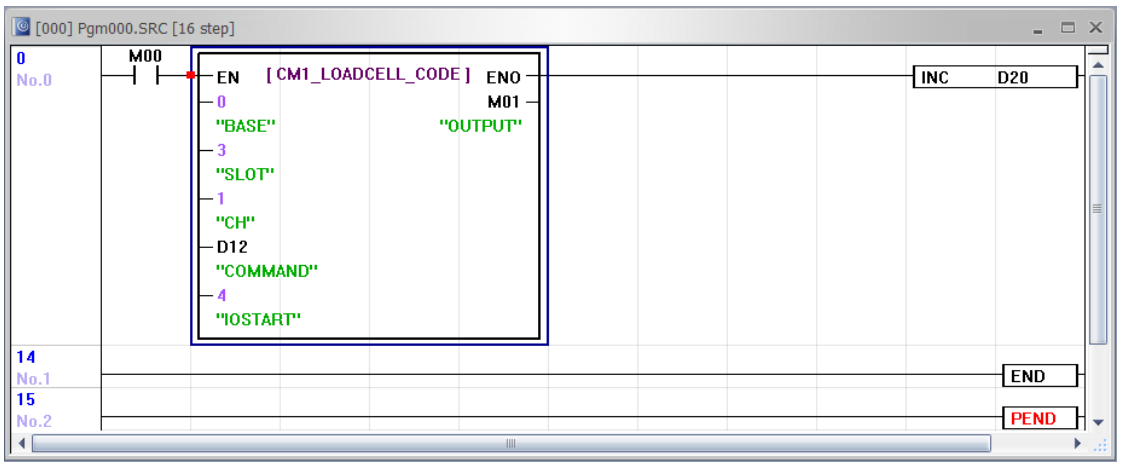


In this case, DA module is installed Slot number 2 and the assigned IO starts from 20. Therefore, you need to write 2 at the IOSTART variable.

• Buffer Memory Index

CM1 LOADCELL : 7 / 22 / 37 / 52(Ch.1~4 : Command main code)

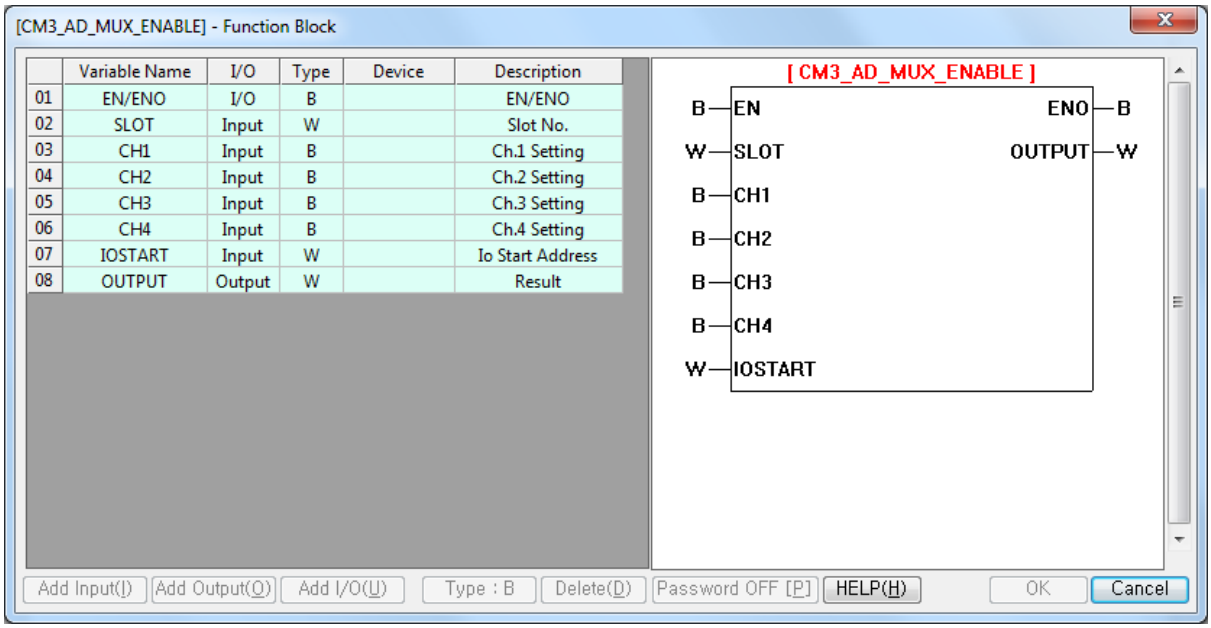
Example) CM1_LOADCELL_CODE



You can write a Command code to Ch1 of slot#3 module in local base. When it works, M01 will be turned ON. (4 is a XY starting address of module in slot#3)

1.3.5.2. AD_MUX_ENABLE

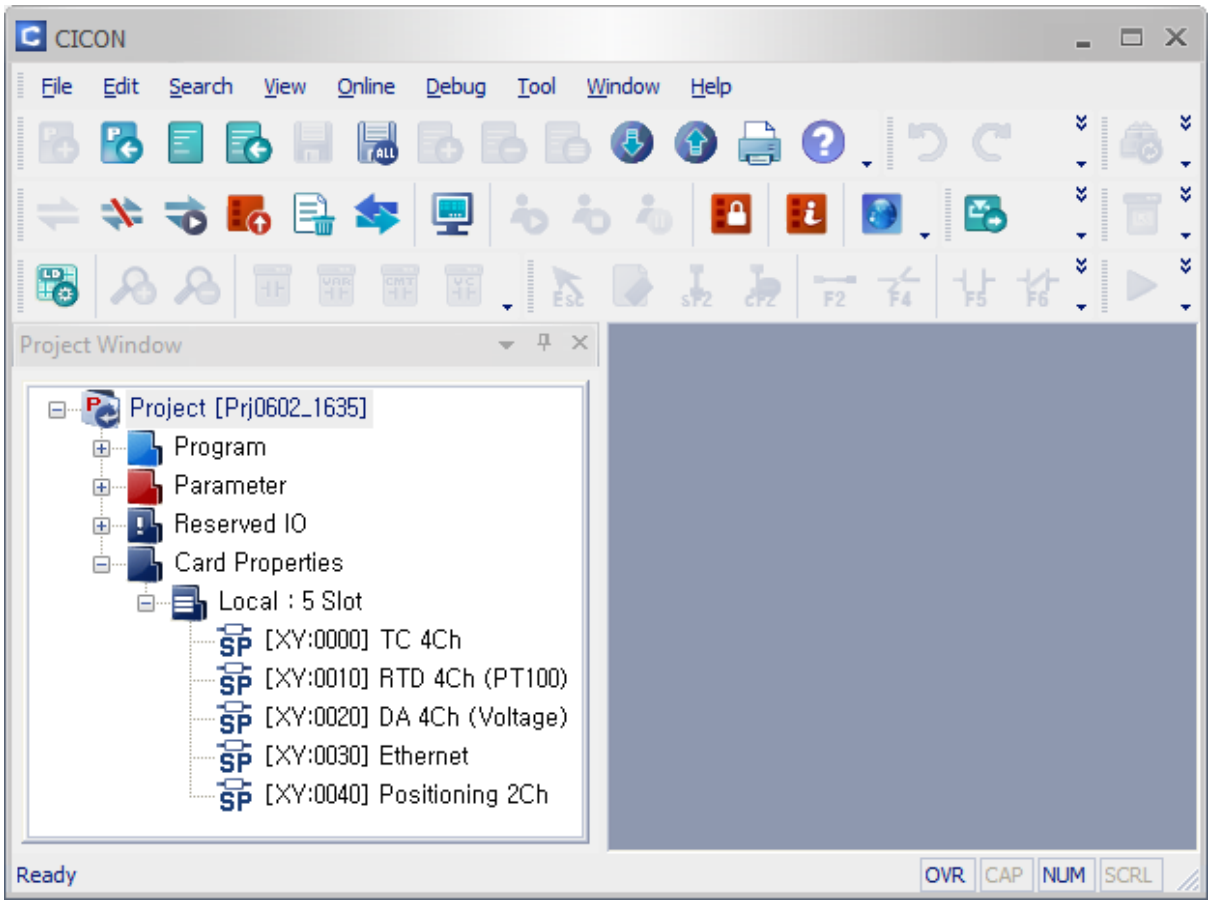
It is used to make a channel Enable or Disable for MUX module.



Variable Name	I/O	Type	Device
SLOT	Input	Word	Write Slot number CM3 : 0 ~ 11
CH1	Input	Word	Write 0 or 1 (Ex. 0: Disable / 1: Enable)
CH2	Input	Word	Write 0 or 1 (Ex. 0: Disable / 1: Enable)
CH3	Input	Word	Write 0 or 1 (Ex. 0: Disable / 1: Enable)
CH4	Input	Word	Write 0 or 1 (Ex. 0: Disable / 1: Enable)
IOSTART	Input	Word	Write starting IO address of DA module. (Ex. X20/Y20 at Slot number2, Write 2)
OUTPUT	Output	Bit	Bit will be turned ON if it works.

- If you write wrong SLOT number or BASE number, CPU will have an error.
- In order to save the value to buffer memory, the Flag of the assigned device address must be turned ON. If the flag is not turned ON, value is removed after Power turned OFF.

Notice : IOSTART address is different with Slot number. Each module has an assigned IO address. For example, 16points Digital IO module has 16 IO address(X0~XF or Y0~YF) and 32points Digital IO module has 32 IO address(X0~X1F or Y0~Y1F).

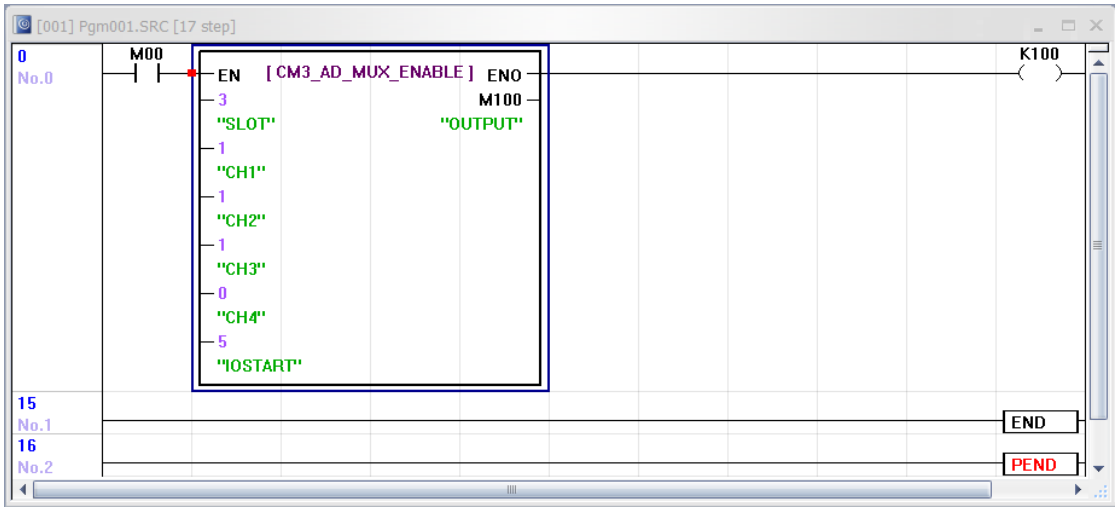


In this case, DA module is installed Slot number 2 and the assigned IO starts from 20. Therefore, you need to write 2 at the IOSTART variable.

• Buffer Memory Index

CM3 AD MUX : 0(Ch.1~4 : Channel Enable / Disable)

Example) CM3_AD_MUX_ENABLE

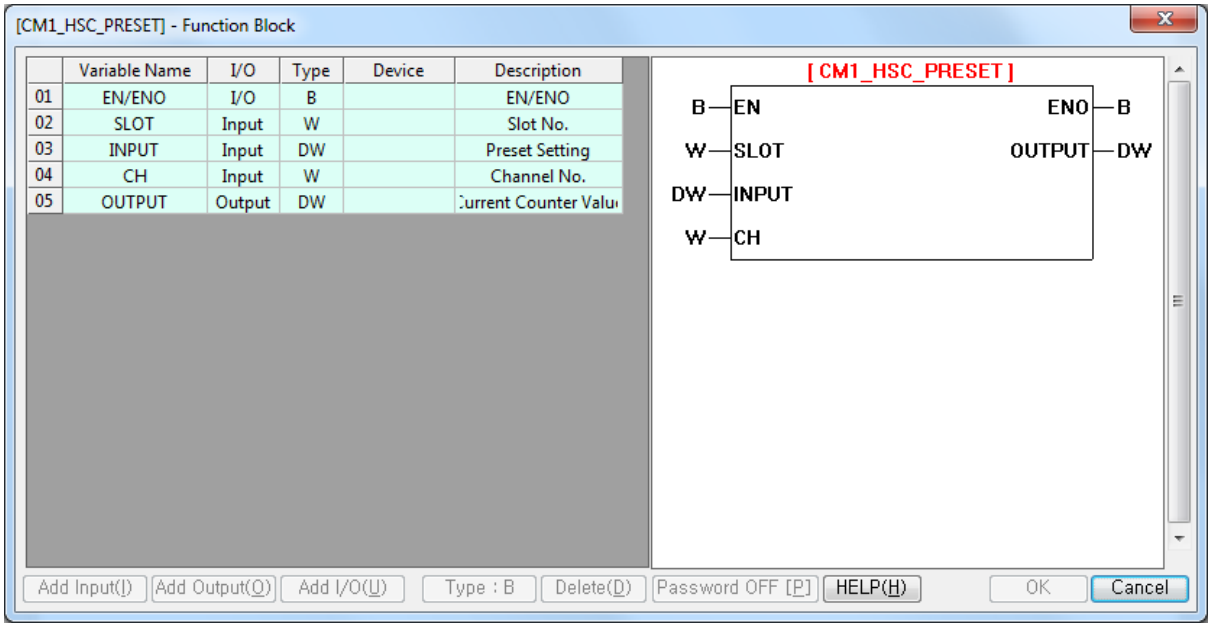


Make Slot#3 module Ch1, Ch2, and Ch3 Enabled and Ch4 Disabled. When it works, M100 will be turned ON. (5 is a XY starting address of module in slot#3)

1.3.6. High Speed Counter

1.3.6.1 HSC_PRESET : DTO, DFRO Instruction

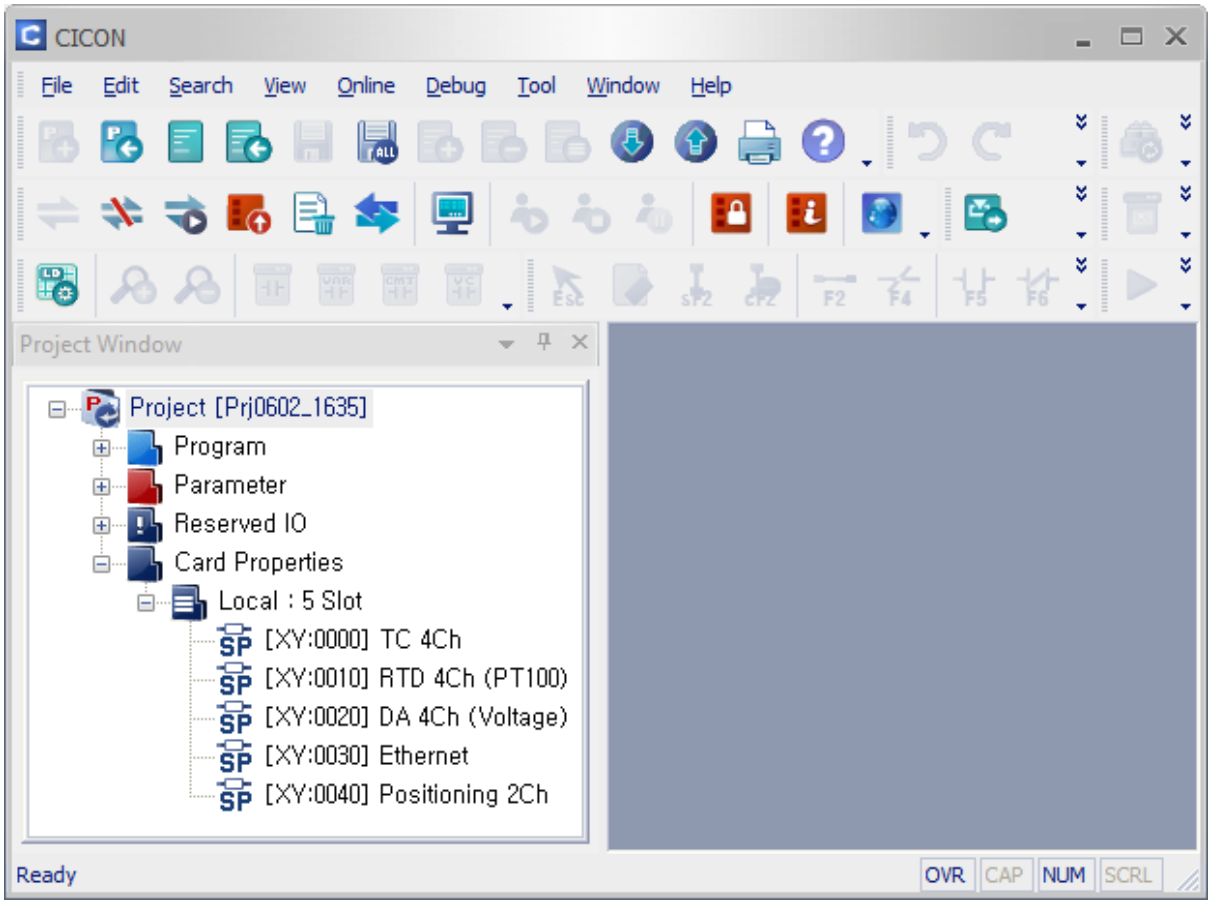
Write preset value and monitor current counting value.



Variable Name	I/O	Type	Device
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
INPUT	Input	Word	Write Preset value (Device address)
IOSTART	Input	Word	Write starting IO address of DA module. (Ex. X20/Y20 at Slot number2, Write 2)
OUTPUT	Output	Bit	Write device address (Save current value to this device address)

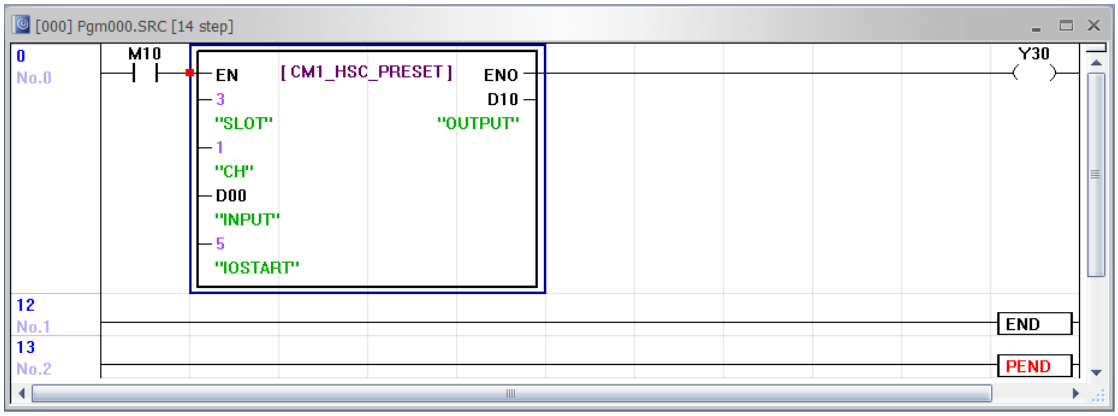
- If you write wrong SLOT number or BASE number, CPU will have an error.
- In order to save the value to buffer memory, the Flag of the assigned device address must be turned ON. If the flag is not turned ON, value is removed after Power turned OFF.

Notice : IOSTART address is different with Slot number. Each module has an assigned IO address. For example, 16points Digital IO module has 16 IO address(X0~XF or Y0~YF) and 32points Digital IO module has 32 IO address(X0~X1F or Y0~Y1F).



In this case, DA module is installed Slot number 2 and the assigned IO starts from 20. Therefore, you need to write 2 at the IOSTART variable.

Example)

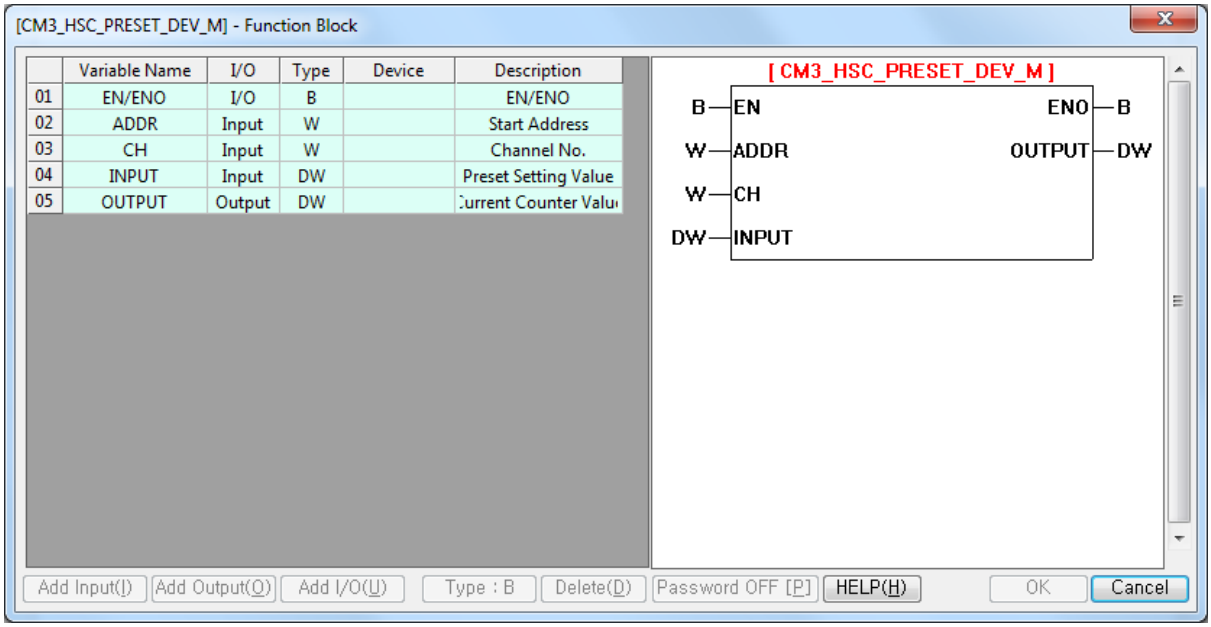


HSC module is installed in Slot number3. Set D00 of Channel 1 as Preset and save current counted value to D10~D11. (If the assigned IO address of HSC is X50/Y50, write 5 at the IOSTART)

1.3.6.2 CM3_HSC_PRESET_DEV : DTO, DFRO Instruction

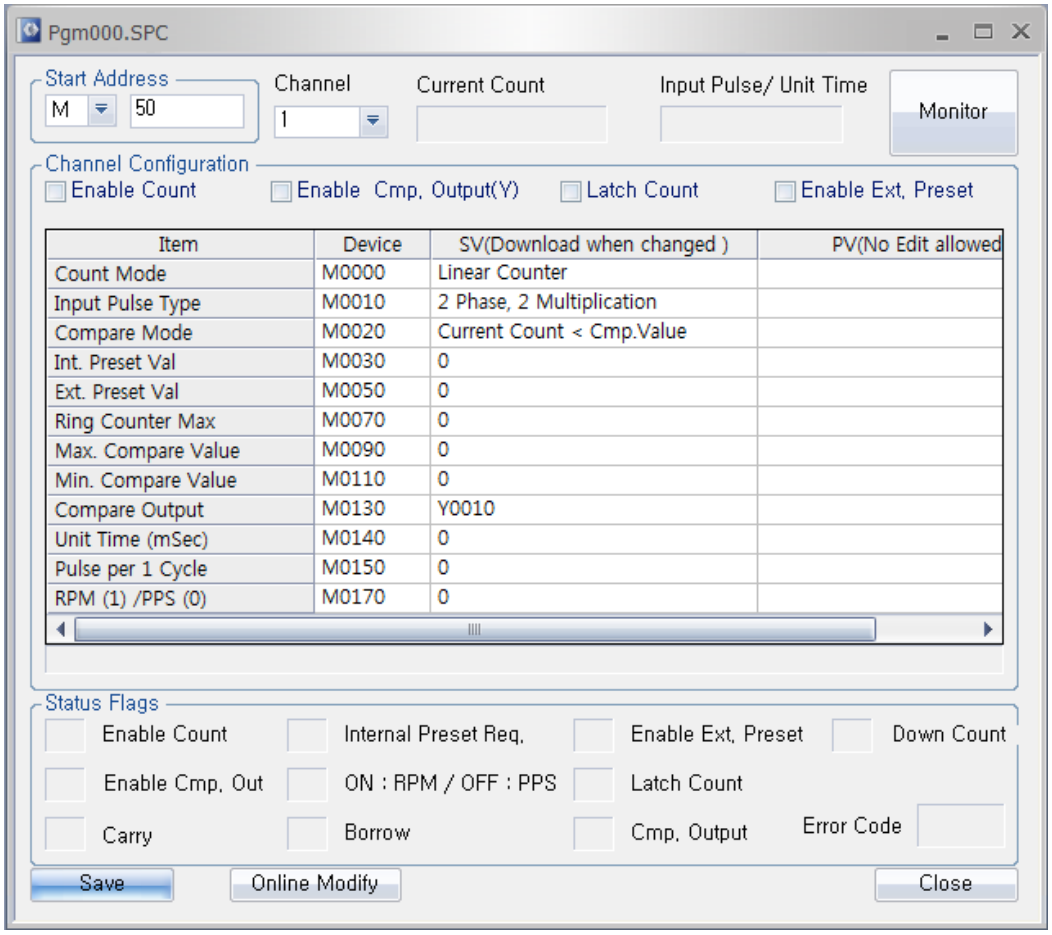
Write preset value and monitor current counting value.

According to the starting address of HSC, select HSC system library D, M, L or K.



Variable Name	I/O	Type	Device
ADDR	Input	Word	Write Starting address of HSC (Ex. In case of M50, Write 50)
CH	Input	Word	Write Channel number. (Ex. Ch2→ Write 2)
INPUT	Input	Word	Write Preset value (Device address)
OUTPUT	Output	Bit	Write device address (Save current value to this device address)

- ADDR : Find out starting address at the HSC program

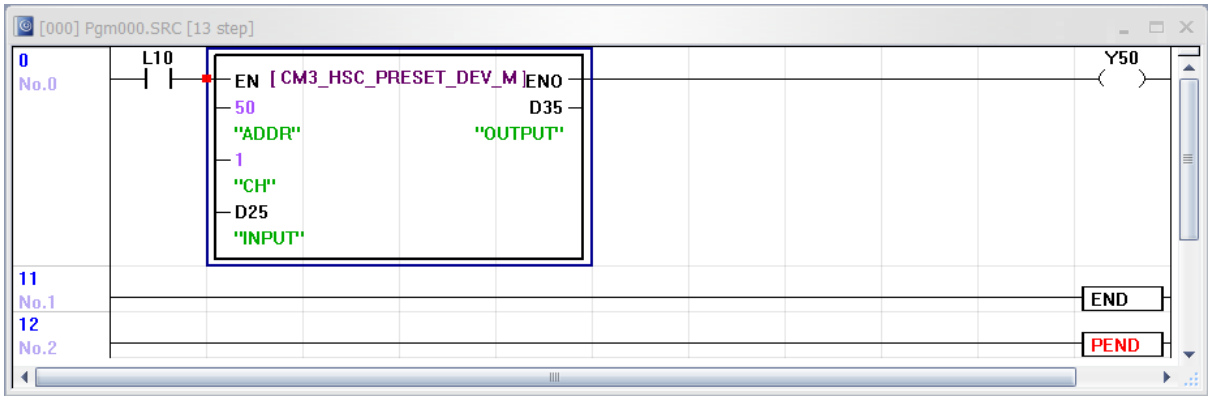


• System Library type

CM3_HSC_PRESET_DEV_D / CM3_HSC_PRESET_DEV_M

CM3_HSC_PRESET_DEV_L / CM3_HSC_PRESET_DEV_K

Example)



The starting address is M50. Set D25~26 of Channel 1 as Preset and save current counted value to D35~36.

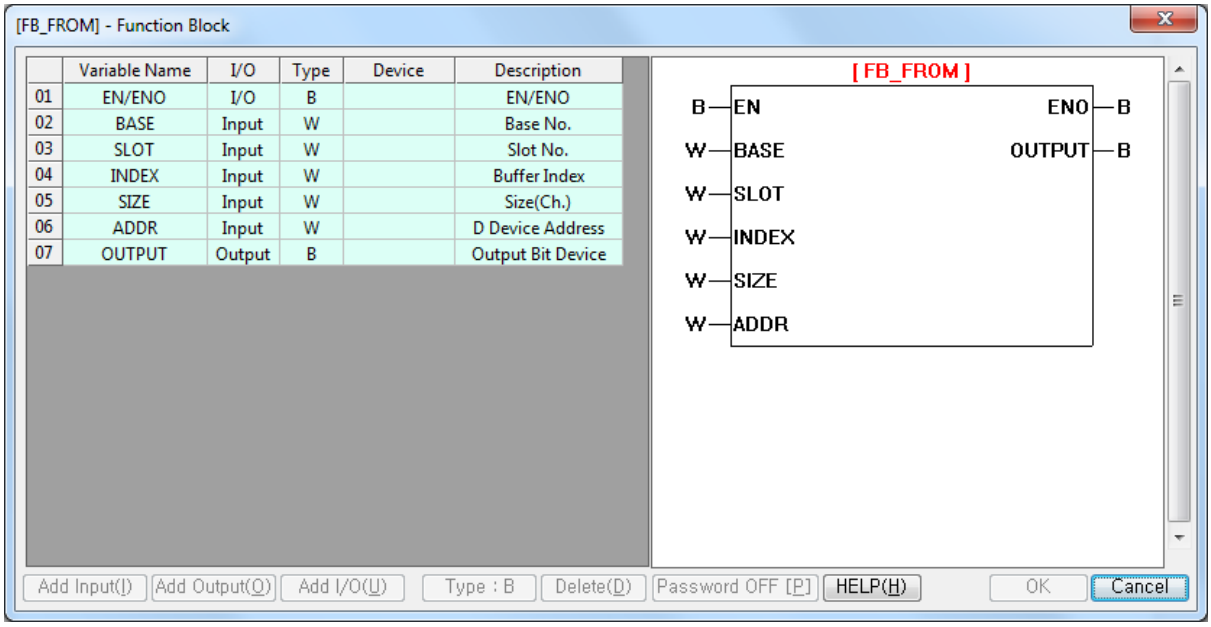
1.3.7. FB Instruction

- **Instruction system library list**

Group	CPU	Library name	Instruction	Description
Instruction	-	FB_FROM	FROM	Read buffer memory of Special module
		FB_SCL	SCL	Scale
		FB_DATEWR	DATEWR	Set PLC Time

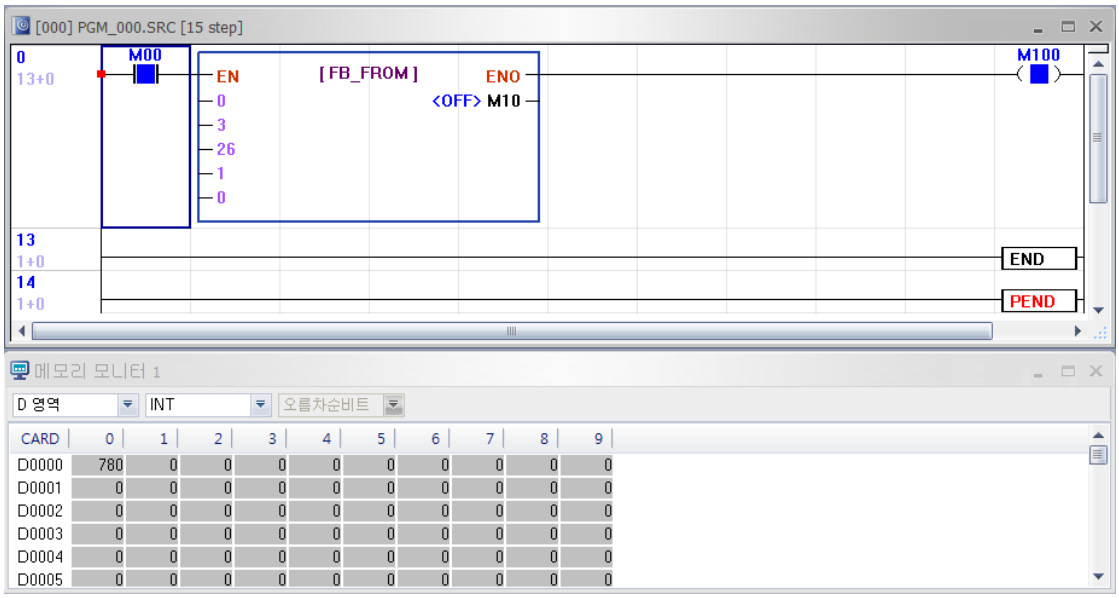
1.3.7.1. FB_FROM – FROM Instruction

It is used to read value from Buffer memory by FROM instruction.



Variable Name	I/O	Type	Device
BASE	Input	Word	Write Base number 0~16 (There is no Base number for CM2 and CM3)
SLOT	Input	Word	Write Slot number CM1 : 0 ~ 11 / CM2 : 1 ~ 4 / CM3 : 1 ~ 11
INDEX	Input	Word	Write Index number of buffer memory (0~255)
SIZE	Input	Word	Write the number of buffer memory (1~256) (Ex. Buffer memory1~5, write 5)
ADDR	Input	Word	Write D address. (Ex. D150 → Write 150)
OUTPUT	Output	Bit	Not used

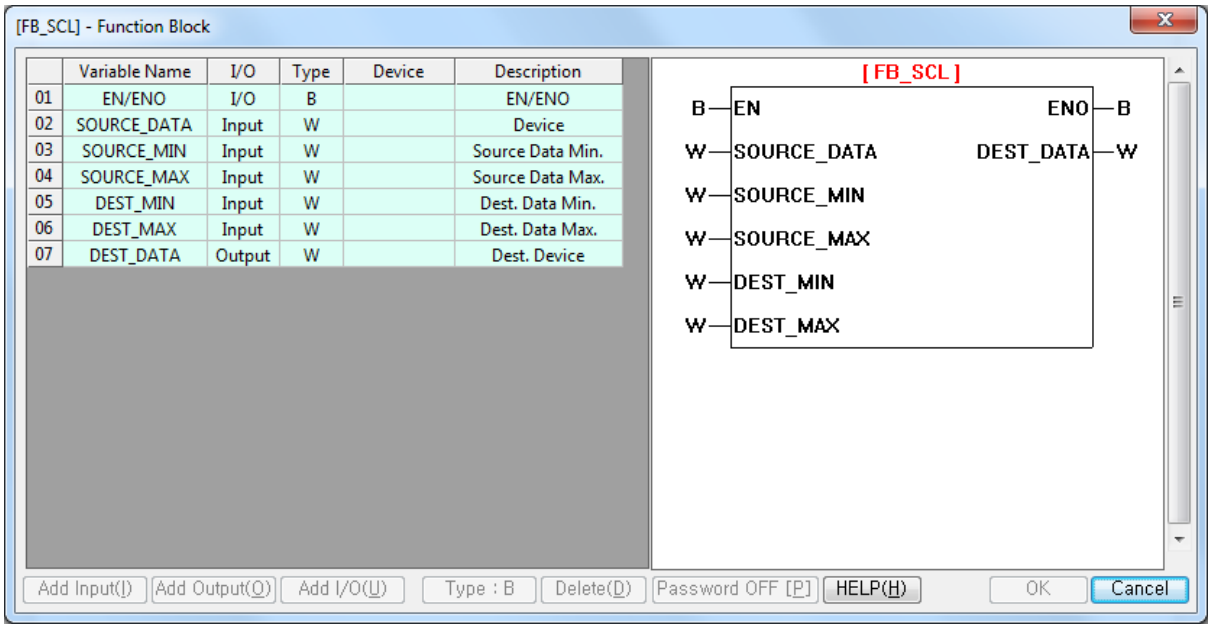
Example)



You can read one data from Buffer memory 26 at Slot number3 in Local Base and save it to D00.

1.3.7.2. FB_SCL – SCL Instruction (Analog input scaling)

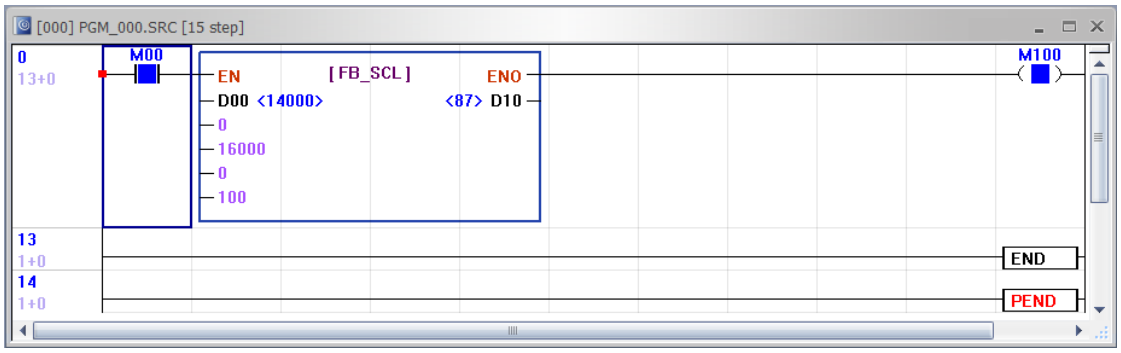
It converts input value to scale value. If scale does not work, ENO will be reset.


[FB_SCL] - Function Block
Variable Name I/O Type Device Description
01 EN/ENO I/O B EN/ENO
02 SOURCE_DATA Input W Device
03 SOURCE_MIN Input W Source Data Min.
04 SOURCE_MAX Input W Source Data Max.
05 DEST_MIN Input W Dest. Data Min.
06 DEST_MAX Input W Dest. Data Max.
07 DEST_DATA Output W Dest. Device
[FB_SCL]
B EN ENO B
W SOURCE_DATA DEST_DATA W
W SOURCE_MIN
W SOURCE_MAX
W DEST_MIN
W DEST_MAX
Add Input(I) Add Output(O) Add I/O(U) Type : B Delete(D) Password OFF [P] HELP(H) OK Cancel

Variable Name	I/O	Type	Device
SOURCE_DATA	Input	Word	Write original value
SOURCE_MIN	Input	Word	Write original minimum value
SOURCE_MAX	Input	Word	Write original maximum value
DEST_MIN	Input	Word	Write scale minimum value

DEST_MAX	Input	Word	Write scale maximum value
DEST_DATA	Output	Word	Write device address (Save scale value to this device address)

Example) FB_SCL



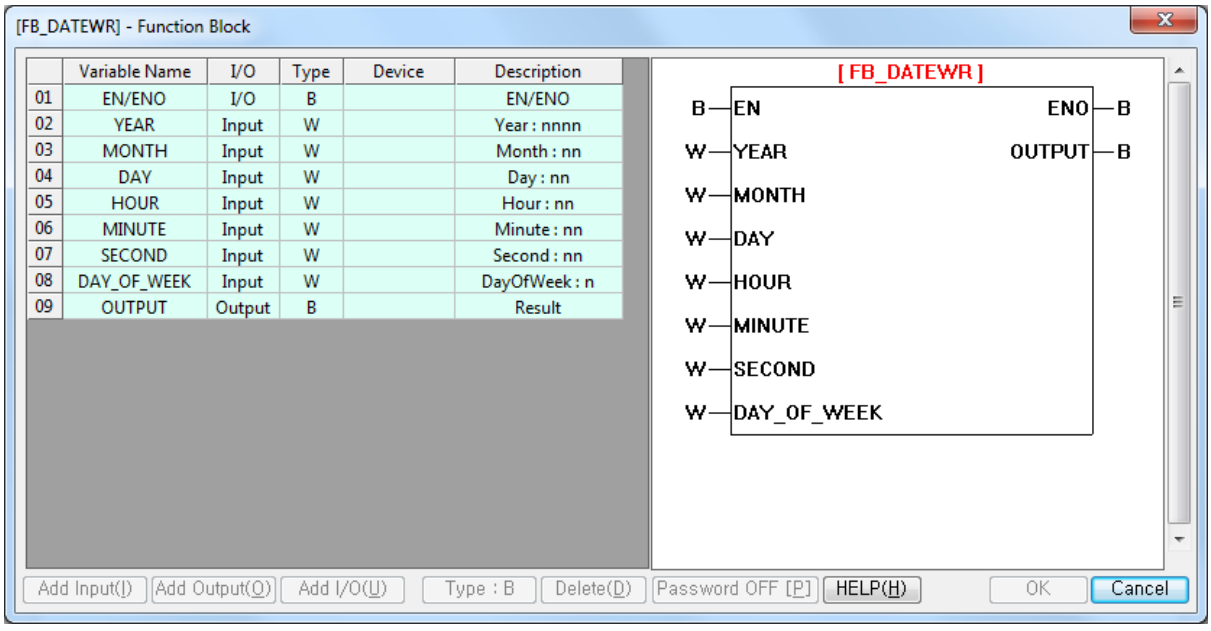
Original input value 14000(D00), minimum value 0, maximum value 16000.

Scale minimum value 0, maximum value 100.

If analog input gets values from 0 to 16000 and you want to have a scale from 0 to 100 then your analog value 14000(D00) will be 87 and 87 will be saved in D10.

1.3.7.3. FB_DATEWR – (Set RTC for PLC CPU module)

It is used to set RTC of PLC CPU module.


[FB_DATEWR] - Function Block
Variable Name | I/O | Type | Device | Description
01 EN/ENO | I/O | B | | EN/ENO
02 YEAR | Input | W | | Year : nnnn
03 MONTH | Input | W | | Month : nn
04 DAY | Input | W | | Day : nn
05 HOUR | Input | W | | Hour : nn
06 MINUTE | Input | W | | Minute : nn
07 SECOND | Input | W | | Second : nn
08 DAY_OF_WEEK | Input | W | | DayOfWeek : n
09 OUTPUT | Output | B | | Result
[FB_DATEWR]
B EN
W YEAR
W MONTH
W DAY
W HOUR
W MINUTE
W SECOND
W DAY_OF_WEEK
ENO B
OUTPUT B
Add Input(I)
Add Output(O)
Add I/O(U)
Type : B
Delete(D)
Password OFF [P]
HELP(H)
OK
Cancel

Variable Name	I/O	Type	Device
YEAR	Input	Word	Write year (2000~2099)
MONTH	Input	Word	Write month (1~12)
DAY	Input	Word	Write date (1~31)
HOUR	Input	Word	Write hour (0~23)
MINUTE	Input	Word	Write minute (0~59)
SECOND	Input	Word	Write second (0~59)
DAY_OF_WEEK	Input	Word	Write day (0~6) (0:Sunday~6:Saturday)
OUTPUT	Output	Bit	If RTC works, it will be turned ON

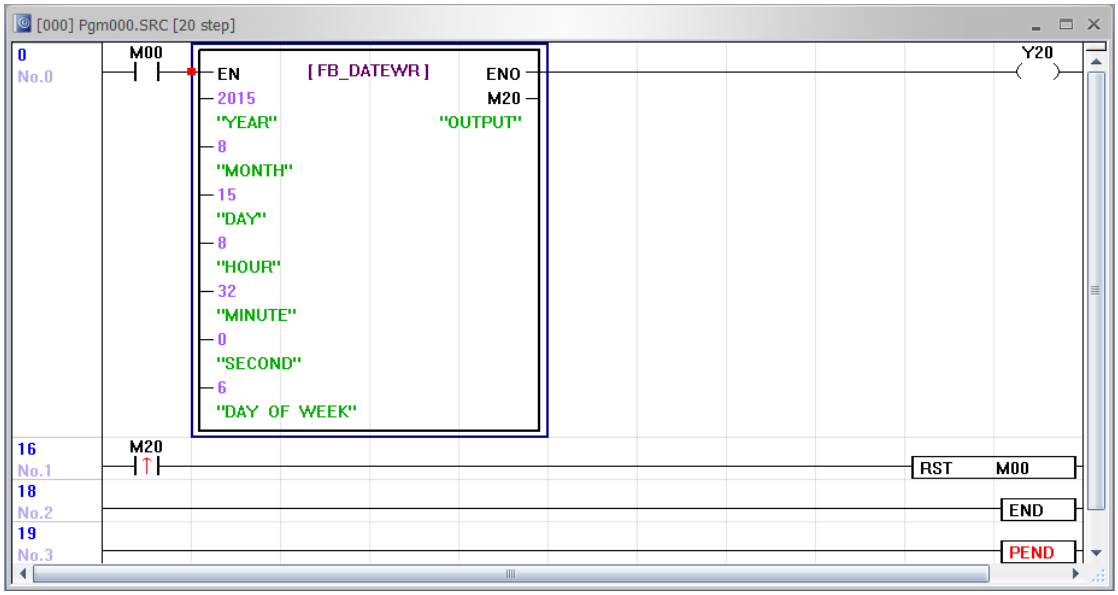
• Day of Week : Sunday = 0 / Monday = 1 / Tuesday = 2 / Wednesday = 3 / Thursday = 4 /

Friday = 5 / Saturday = 6

• If EN is not OFF, RTC runs over and over and this will put CPU performance down. Therefore, after using Function Block, turn EN Off or

(Positive transition-Sensing Contact) for this function block.

Example) FB_DATEWR (Set RTC for PLC CPU module)



Date: August 15, 2015. Time: 8 : 32 : 00 (Saturday)

When it works, M20 bit will be turned ON and then M00 will be cleared.